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FOREST TREES of TEXAS

How to Know Them

BULLETIN 20

TEXAS FOREST SERVICE
E. O. SIECKE, Director
College Station, Texas

Forest Service, U. S. Department of Agriculture Cooperating
College Station, Texas

1928

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FOREST TREES

FOREST TREES
of
TEXAS

HOW TO KNOW THEM

A Pocket Manual

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BULLETIN 20

TEXAS FOREST SERVICE
E. O. SIECKE, Director
College Station, Texas

AUGUST, 1928

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FOREWORD

A constantly increasing number of requests is being received from Texas citizens in all parts of the state for popular information about the more common trees of Texas. This situation, and the lack of a non-technical reference book on the subject, has lead to the publication of this manual.

An effort has been made to put the text in simple words, in the hope that the manual will be interesting and useful to children as well as to adults. Scientific terms have been avoided except for the names of the trees, necessary for botanical reference and identification. The scientific names follow those contained in the "Check List of the Forest Trees of the United States," published by the U. S. Department of Agriculture as Miscellaneous Circular No. 92. The ranges of the various species within the state have been determined from this Check List and from the late Dr. C. S. Sargent's "Manual of the Trees of North America" (1922 Edition), checked by the personal observations of the authors and data in the files of the Texas Forest Service.

Texas has a large variety of native trees. Altogether there are about two hundred and twenty-five species and some fifty-three varieties representing about eighty-six different genera, or natural tree groups such as, for example, the oaks, hickories, elms, cypress and pines. Ninety-two species of trees, including the most important and most abundant, are described in this manual, and a number of others are mentioned by name.

Grateful acknowledgment is hereby made to the State Forestry Departments of Maryland, Virginia, North Carolina, and Tennessee for the use of portions of the text. All of the illustrations are from original drawings by Mrs. A. E. Hoyle of the United States Forest Service.

The rapidly increasing interest in outdoor life, stimulated by good roads, the automobile, boys' club and scout movements, and the widening outlook resulting from the spread of education, encourages the proper treatment of our trees and forests. It is highly important that this be done in order that our forests may continue to furnish the material so essential to the maintenance of the industrial and social life of our state and nation, to protect our farms and streams, to provide places of pleasure and recreation for our people.

FORESTRY IN TEXAS

Texas has for years ranked either sixth or seventh among the states as regards the production of forest products and the magnitude of her lumber industry. According to the last census report, the Texas lumber industry has an annual payroll of over $22,000,000, which is distributed to 23,417 citizens. It ranks as our premier manufacturing industry, since more wage earners are employed by it than any other single manufacturing industry in the state.

This great industry has been developed and now rests upon the timber resources found in the forty counties located in the extreme eastern part of the state, comprising what is commonly known as the "commercial timber belt." In this area there were originally 14,000,000 acres of virgin pine timber and more than 4,000,000 acres of hardwood timber. At the present time there are only about 1,000,000 acres of virgin pine timber remaining, and this area is being further reduced by over 150,000 acres annually. Young pine timber in sufficient amount to make a lumber crop has succeeded in reproducing itself on less than 3,000,000 acres of the cut-over land. More than 4,000,000 acres of cut-over land in East Texas are either entirely unproductive or have too scant a timber growth to produce a lumber crop. Much of the hardwood timber has been cut, but Texas still has a creditable reserve of hardwood forests.

Greatly increased interest manifested during the past ten years in growing timber as a crop on our non-agricultural lands in East Texas gives assurance that timber supplies needed in the future will not be lacking, but will be produced in sufficient quantity and will be available at reasonable cost.

In 1915 the state recognized its responsibility pertaining to the conservation of forest resources by initiating state forestry activities, which have since developed into the Texas Forest Service, located at the Agricultural and Mechanical College and operating under the supervision of the Board of Directors of that institution.

It was early found that the bulk of the cut-over lands would reforest with another crop of timber if such areas could be protected from fires, which have annually burned over most of the timberland annually. Therefore the problem of fire prevention and fire suppression has had major attention on the part of the state. Lumbermen, farmers and other East Texas citizens have rendered much volunteer assistance in fire fighting work. During the past six years the area burned over annually has not exceeded five per cent of the area under organized fire protection.

The Texas Forest Service has, through legislative appropriations, acquired three State Forests in East Texas. The State Forest in Newton County and a similar area in Montgomery County are under administration. The purpose of these State Forests, or field laboratories, is to demonstrate what is already known concerning the reproduction and management of timber as a crop and to ascertain through research the many things that are not yet known about this subject. Research and demonstration work is actively under way on these areas. A small forest nursery has been started on each area, and this year approximately 500,000 pine trees will be available for planting on the State Forest lands and for distribution, at actual cost of production, to those who wish to secure trees for planting on cut-over land.

Much progress has also been made in assisting lumber companies that are seriously considering managing their timberlands so as to produce successive crops of forest products and in this manner put their mills and wood-working plants on a permanent basis.

Similar assistance is given to the farmers of East Texas in the management of their farm wood lands. The farmers in the commercial timber belt own approximately 8,000,000 acres of land, of which about 46 per cent is classed as timberland. Proper development of this vast area of farm woodlands will not only benefit the farmers but will constitute an important factor in supplying forest products in the future.

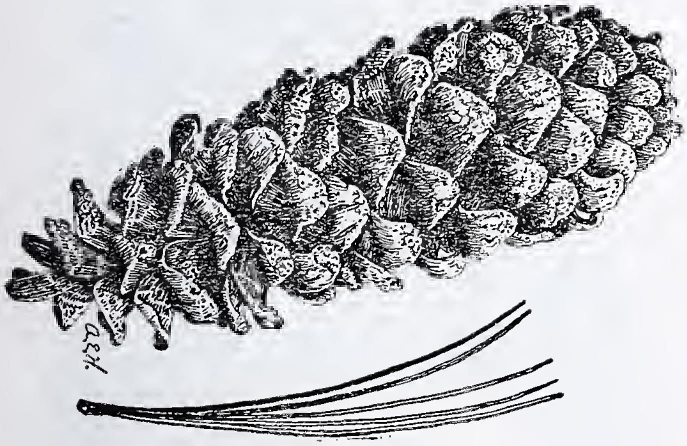
E. O. SIECKE, Director,
Texas Forest Service.

MEXICAN WHITE PINE

(*Pinus strobiformis* Engl.)

THIS species of white pine grows in the Guadalupe Mountains in west Texas. It is also native to many mountains in southern New Mexico, southern Arizona and adjacent parts of Mexico.

The **bark** is deeply broken into flat plates and of a reddish brown color. The young twigs are slightly hairy, becoming smooth. The **leaves,** or "straws" like those of all the white pines, are in clusters of five, light green, slender but stiff, from 4 to 6 inches in length.



MEXICAN WHITE PINE (one-half natural size)

The two kinds of **flowers,** or "bloom," are borne separately on the same tree, and like all of the pines the **fruit,** or cones, require two years to mature. The cones are mostly from 5 to 8 inches in length, made up of thin scales whose tips turn backward and are not armed with prickles.

The **wood** is medium hard, strong, reddish white, with nearly white sapwood. It would be a valuable wood for various purposes if the quantity were not so limited.

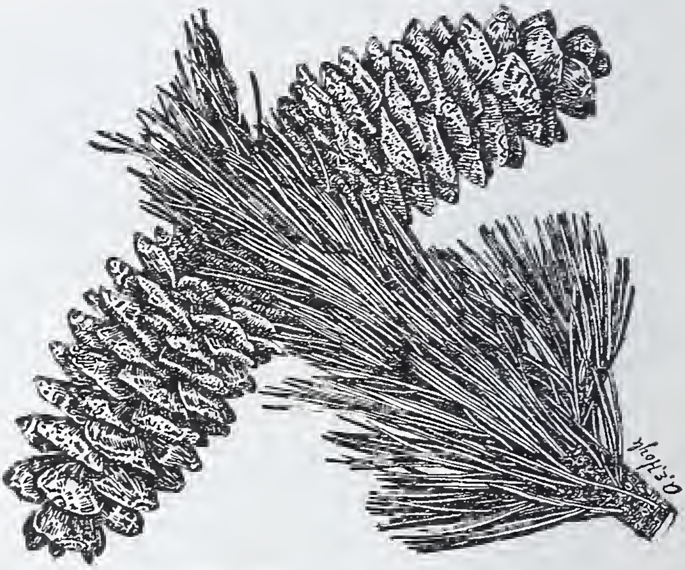
LIMBER PINE (Rocky Mountain White Pine)

(*Pinus flexilis* James)

COVERING a large range of country in the high mountains of the western part of the United States, the limber pine is found in western Texas in the Guadalupe and Davis Mountains.

As the name indicates, the branches and twigs are especially flexible and tough, often light purple in color. The branches form a rounded tree top or head.

The **leaves** are in clusters of five each. They are stiff and stout, about 2 to 3 inches in length, and arranged in clusters or tufts near the ends of the branches. They stay on the twigs for five to six years.



LIMBER PINE (one-third natural size)

The cones, or **fruit**, are relatively short or stocky, mostly from 3 to 6 inches long, made up of rounded rather thick scales, some turned forward and some backward. They are attached by very short stout stems. As with all the pines, the seeds mature at the end of the second season of growth.

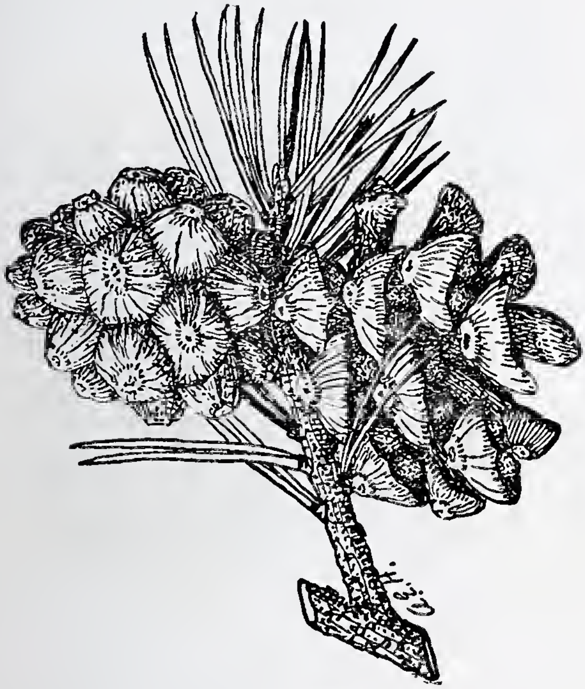
The **wood** is relatively soft, close-grained, slightly yellowish or reddish. It is not cut in quantity and the trees are usually rather limby and short-bodied, which largely accounts for the small commercial use.

PINON (Nut Pine)

(*Pinus edulis Engelm.*)

THE nut pine, or pinon, is found scattered over the uplands and canyons in the western parts of the state. The tree forms open forests over great areas from Colorado south and west into Mexico. It is a small tree found on warm slopes or in sheltered locations, and forms a bushy top with orange-colored branchlets.

The **leaves** occur in clusters of two leaves each (rarely 3), and are stiff, stout, curved, dark green in color, and about an inch in length. Each year's crop of leaves remains on the tree from 5 to 8 years.



PINON (natural size)

Like all the pines, it has male and female flowers separate on the same tree. The **cone,** or burr, is rounded, about 1 to 2 inches across, and produces large seeds or "nuts", from one-half to three-fourths inch long. The seeds are rich in food values and form an important article of diet for the Indians. They are gathered and sold widely as fancy "nuts" in many larger towns and cities.

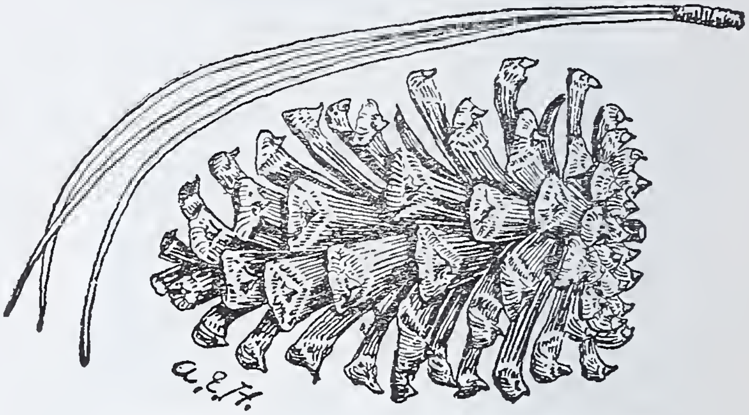
The **wood** is light, soft, close-grained, and pale brown, used for fuel and sometimes as fencing.

WESTERN YELLOW PINE

(*Pinus ponderosa* Laws.)

THE most important commercial pine in the Southwest and parts of the Pacific Northwest is the western yellow pine. It is a large and valuable lumber tree, but locally in Texas at its southeastern limit, is of small size and comparatively little value. Its range is in the Guadalupe and Davis Mountains in West Texas.

The **leaves** are mostly 5 to 8 inches long and three in a cluster. The clusters are considerably massed toward the ends of naked branches and they remain on the tree for about 3 years. The tree tops are broad and rounded.



WESTERN YELLOW PINE (one-half natural size)

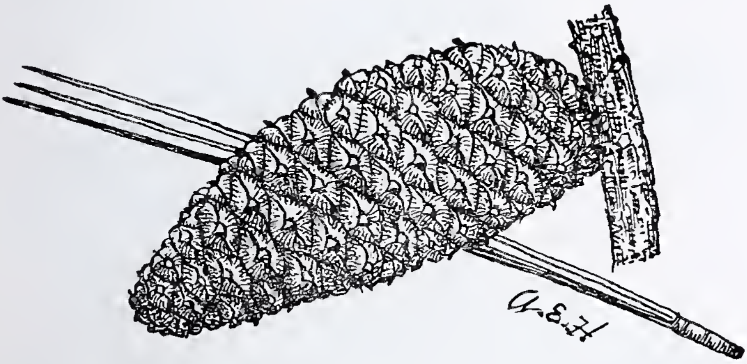
The cones, or **fruit**, are on short stems, reddish brown, oval in shape, and the scales are armed with stout recurved prickles.

The **wood** of this tree as found extensively in the Rocky and Coastal Mountains of the West is of excellent quality, surprisingly uniform in texture for a tree of the yellow pine group. The better grades are often classed on the market with white pine lumber. The wood is hard, strong, rather fine grained and light reddish white surrounded by a thick band of nearly white sap wood.

LOBLOLLY PINE

(*Pinus taeda* L.)

A FAST-GROWING member of the yellow pine group, loblolly pine is the leading tree in abundance and value in southeast Texas from Orange west to Walker and Waller counties, and abundant on low ground northward to the Oklahoma line. It seeds up abandoned fields rapidly, particularly in sandy soils where the water is close to the surface. It is also frequent in clumps along the borders of swamps and as scattered specimens in the swamp hardwood forests.



LOBLOLLY PINE (one-half natural size)

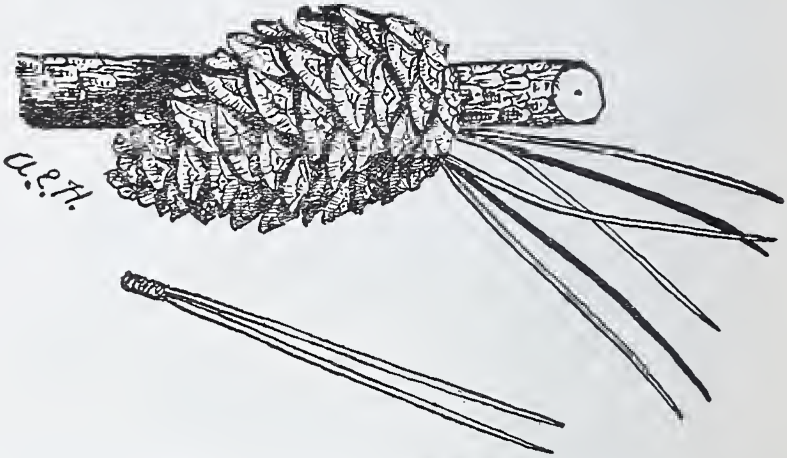
The **bark** is dark in color and deeply furrowed, and often attains a thickness of as much as 2 inches on large-sized trees. The **leaves**, or needles, 6 to 9 inches long, are borne three in a cluster, and, in the spring bright green clumps of them at the end of branches give a luxuriant appearance to the tree. The **fruit** is a cone, or burr, about 3 to 5 inches long, which ripens in the autumn of the second year, and, during fall and early winter, sheds many seeds which, by their inch-long wings, are widely distributed by the wind.

The resinous **wood** is coarse-grained, with marked contrast, as in the other yellow pines, between the bands of early and late wood. The wood of second-growth trees has a wide range of uses, where durability is not requisite, such as for building material, box shooks, barrel staves, basket veneers, pulpwood, lath, mine props, piling and fuel.

SHORTLEAF PINE (Yellow Pine)

(*Pinus echinata* Mill.)

THE shortleaf pine, also known as yellow or rosemary pine is the important pine over an extensive area in northeast Texas. It is essentially a tree of the hilly section, and is found in pure stands and in mixture with hardwoods. The mature tree has a tall, straight stem and an oval crown, reaching a height of about 100 feet and a diameter of about 2½ feet. The young tree, when cut or burned back, reproduces itself by sprouting from the stump.



SHORTLEAF PINE (two-thirds natural size)

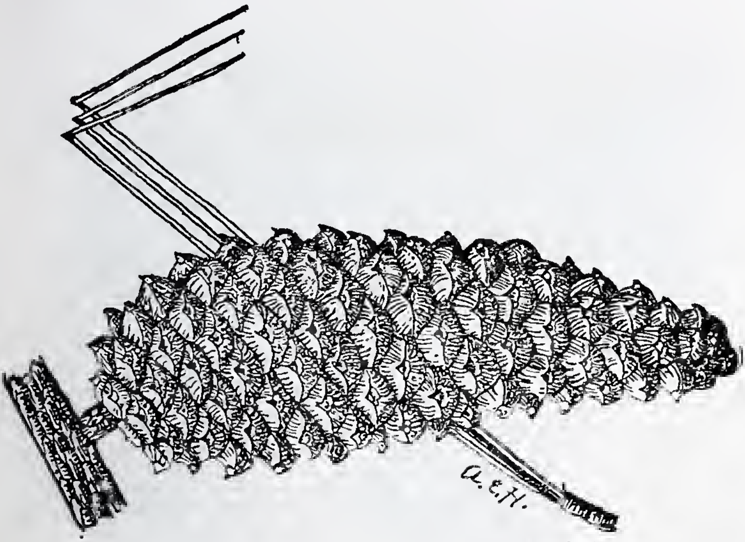
The **leaves** are in clusters of two or three, from 3 to 5 inches long, slender, flexible, and dark blue-green. The **cones**, or burrs, are the smallest of all our pines, 1½ to 2½ inches long, oblong, with small sharp prickles, generally clustered, and often holding to the twigs for 3 or 4 years. The small seeds are mottled and have a wing, which is broadest near the center. The **bark** is brownish red, broken into rectangular plates; it is thinner and lighter-colored than that of loblolly pine.

The **wood** of old trees is rather heavy and hard, of yellow-brown or orange color, fine-grained and less resinous than that of the other important southern pines. It is used largely for interior and exterior finishing, general construction, veneers, paper pulp, excelsior, cooperage, mine props, and other purposes.

LONGLEAF PINE
(*Pinus palustris* Mill.)

THE longleaf pine is one of our most striking trees. When young the single upright stem with the candle-like silvery buds and long, dark, shiny leaves, forms a handsome plume of green. In later youth the stalwart, sparingly branched sapling, with its heavy twigs and gray bark, attracts immediate attention. Mature trees have tall, straight trunks, 1 to 3 feet in diameter and open, irregular crowns.

Longleaf pine in Texas covers an area of about 2,500 square miles from Orange north to Sabine and west to Trinity Counties.



LONGLEAF PINE (one-third natural size)

The **leaves** are from 10 to 15 inches long, in clusters of three, and gathered toward the ends of the thick, scaly twigs. The **flowers,** appearing in early spring before the new leaves, are a deep rose-purple, the male in prominent, short, dense clusters and the female in inconspicuous groups of two to four.

The **cones,** or burrs, are 6 to 10 inches long, slightly curved, the thick scales armed with small curved prickles. The cones usually fall soon after the seeds ripen, leaving their bases attached to the twigs.

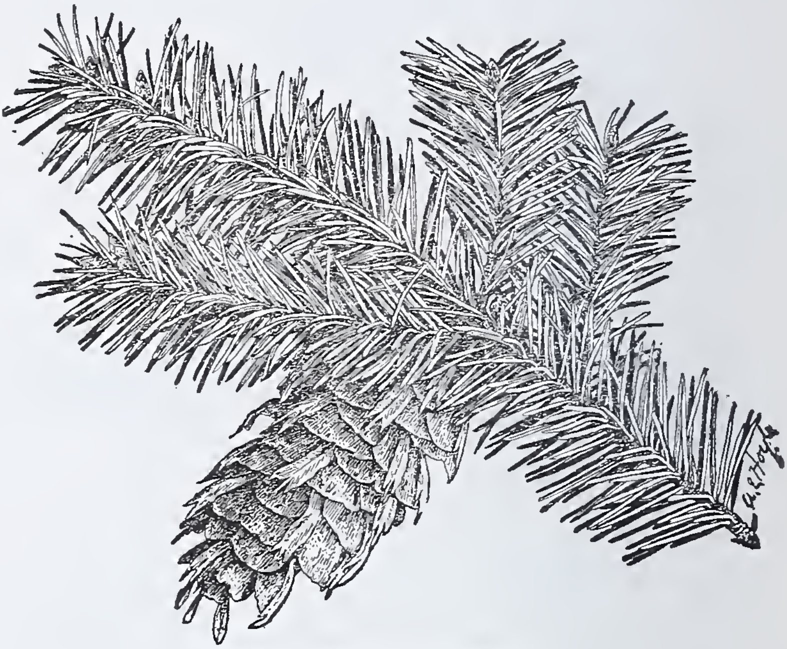
The **wood** is heavy, hard, strong, tough and durable. It is used for all kinds of building and other construction. Naval stores, consisting of turpentine and rosin are obtained from this tree.

DOUGLAS FIR

(*Pseudotsuga taxifolia* Britt.)

THIS very valuable timber tree of the western United States reaches its extreme southeastern limit in the mountains of west Texas. It is a small tree locally but in the Pacific northwest it reaches a height of 200 feet and a diameter of 10 to 12 feet, although usually smaller.

The **leaves** are linear, about an inch in length, yellowish or bluish green, and arranged closely in spirals around the stem. They remain on the twigs for many years.



DOUGLAS FIR (one-half natural size)

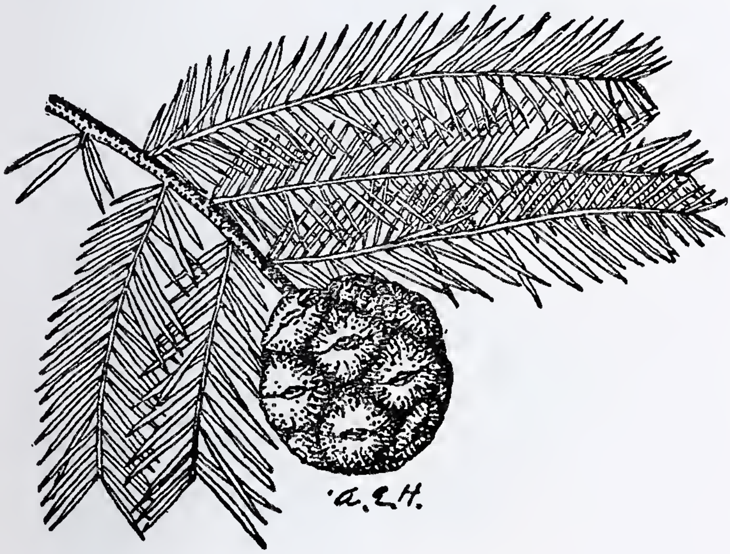
The cone, or **fruit,** hangs downward and is easily identified from those of all other trees by the protruding bracts, or "straws". The mature cones are 2 to 4 inches long, and brownish red.

The **wood** is moderately light, reddish tinted and surrounded by nearly white sapwood. It varies widely in respect to density, quality and width of sapwood. In British Columbia, Washington and Oregon it is extensively manufactured and sold under the name of "Oregon Pine." The bark is sometimes used in tanning leather.

CYPRESS

(*Taxodium distichum* Rich.)

CYPRESS, or bald cypress, is found exclusively in swamps which are flooded for long periods at a time, and on wet stream banks and bottomlands. It occurs in east Texas west to the Nueces River. The straight trunk has numerous ascending branches, and narrow conical outline. In old age the tree generally has a broad fluted, or buttressed base, a smooth slowly tapering trunk and a broad, open, flat top of a few heavy branches and numerous small branchlets. Virgin growth timber attained heights up to 130 feet and diameters up to 10 feet.



CYPRESS (two-thirds natural size)

The **bark** is silvery to cinnamon-red and finely divided by numerous longitudinal fissures. The **leaves** are about one-half to three-fourths of an inch in length, arranged in feather-like fashion along two sides of small branchlets, which fall in the autumn with the leaves still attached; or they are scale like and much shorter, light green, and sometimes silvery below.

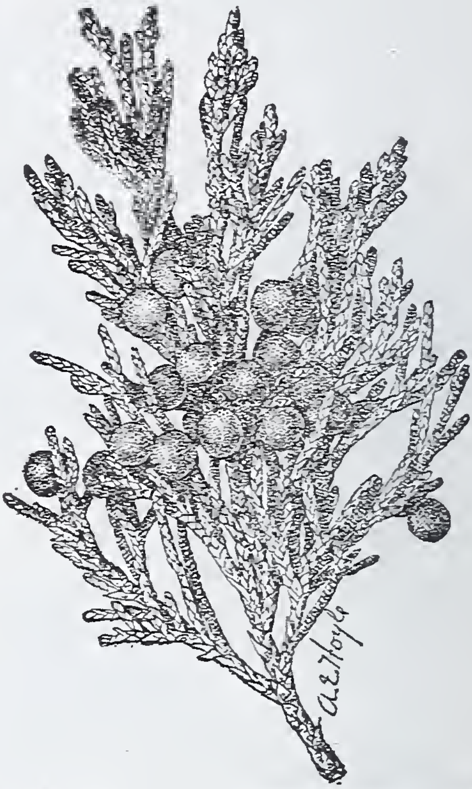
The **fruit** is a rounded cone, or "ball" about one inch in diameter, with thick irregular scales.

The **wood** is light, soft, easily worked, with a light sap wood and dark-brown heart-wood. It is particularly durable in contact with the soil. It is in demand for exterior trim of buildings, greenhouse planking, boat and ship building, shingles, posts, poles and crossties.

MOUNTAIN CEDAR

(*Juniperus mexicana* Spreng.)

IN central and west Texas are found no less than nine species of cedars or junipers, including one eastern, one southern and seven western species. Of these, the most abundant and important is the mountain cedar. This tree often forms extensive low forests or dense brakes on the limestone hills and slopes of the Edwards Plateau and Grand Prairie.



MOUNTAIN CEDAR (two-thirds natural size)

The trunk is covered with shreddy brown **bark.** The leaves are small, scale-like, blunt pointed, fringed with minute teeth, and dark blue. On vigorous young plants the leaves are sharp pointed and longer, up to one-half inch.

The nearly round, dark blue berries, or **fruit,** have a thin, pleasant-scented, sweet flesh, enclosing 1 or 2 seeds, and ripen in one season.

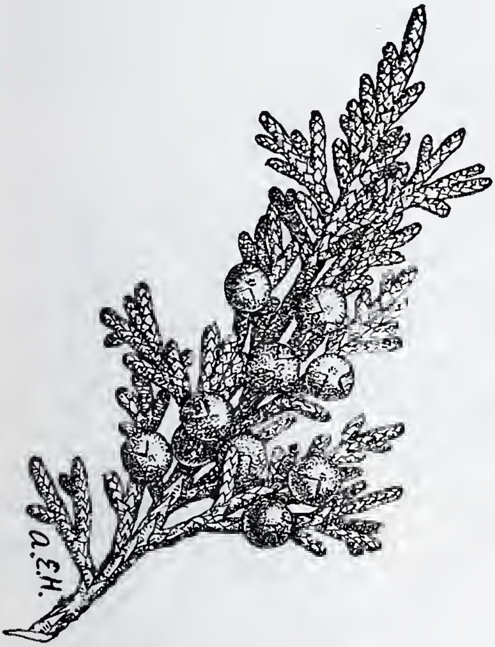
The **wood** is light, hard, light brown, close-grained but weak. It is extensively used for fence posts, poles and fuel. The tree is sometimes used for ornamental planting.

RED CEDAR

(*Juniperus virginiana* L.)

RED CEDAR is found scattered throughout east Texas, in all soils but usually on gravelly ridges and rocky hillsides of the uplands.

There are two kinds of **leaves**, usually both on the same tree. The most common is dark green, minute and scale-like, clasping the stem in four ranks, so that the stems appear square. The other kind, usually appearing on young growth or vigorous shoots, is awl-shaped, quite sharp-pointed, spreading and whitened.



RED CEDAR (three-fourths natural size)

The two kinds of **flowers** are at the end of minute twigs on separate trees blooming in February or March.

The **fruit** which matures in one season is pale blue, one-quarter inch in diameter, berry-like, enclosing one or two seeds in the sweet flesh.

The **bark** is very thin, reddish brown, peeling off in long shred-like strips. The trunk is usually more or less grooved.

The **heartwood** is distinctly red, and the sapwood white, this color combination making very striking effects when finished as cedar chests, closets and interior woodwork. The wood is aromatic, soft, strong and of even texture; desirable for lead pencils. It is very durable in contact with the soil, and is in great demand for posts, poles and rustic work.

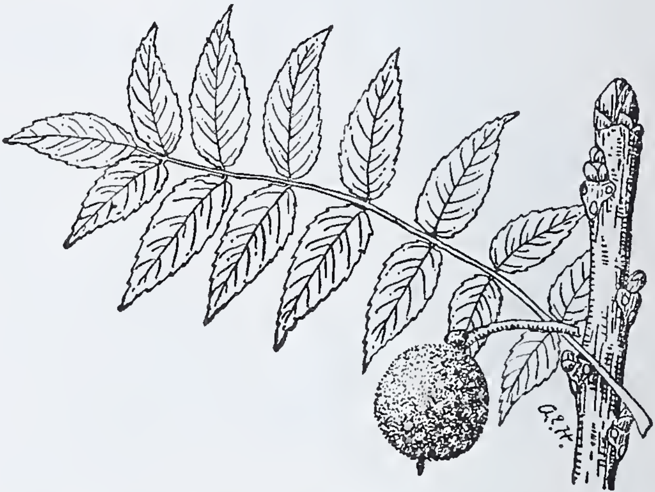
Since the red cedar spreads the cedar-rust of apples, it is inadvisable to plant this tree in or near orchards, or anywhere in regions devoted to commercial apple production.

BLACK WALNUT

(*Juglans nigra* L.)

THIS valuable forest tree occurs on rich bottomlands and moist fertile hillsides as far west as San Antonio River. In the most favorable situations and among other trees, it may attain a height of nearly 100 feet with a straight stem, clear of branches for half of its height. In open-grown trees the stem is short and the crown broad and spreading.

The **leaves** are alternate, compound, 1 to 2 feet long, consisting of from 15 to 23 leaflets of a yellowish green color. The leaflets are about 3 inches long, extremely tapering at the end, and toothed along the margin. The **bark** is thick, dark brown in color, and divided by rather deep fissures into rounded ridges.



BLACK WALNUT
Leaf, one-fifth natural size Fruit, one-fourth natural size

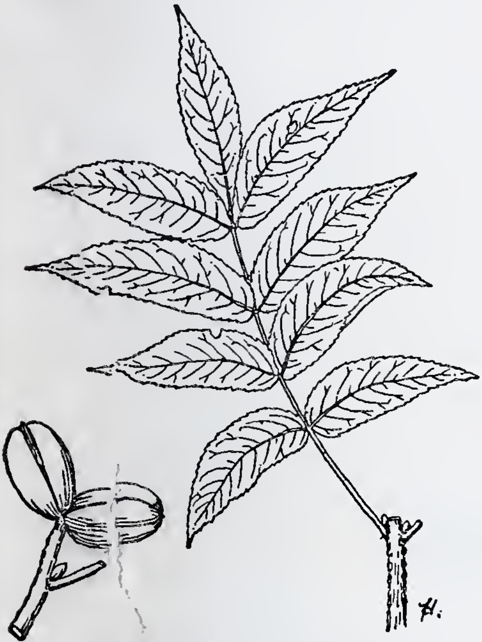
The **fruit** is a nut, borne singly or in pairs, and enclosed in a solid green husk which does not split open, even after the nut is ripe. The nut itself is black with a very hard, thick, finely ridged shell, enclosing a rich, oily, edible kernel.

The heart **wood** is of superior quality and value. It is heavy, hard and strong, and its rich chocolate brown color, freedom from warping and checking, susceptibility to a high polish, and durability make it highly prized for furniture and cabinet work, gun-stocks, and airplane propellers. Walnut is easily propagated from the nuts, and should be more widely planted and grown for timber and nuts.

PECAN

(*Hicoria pecan* Britton)

THE pecan, "state" tree of Texas, is found native in the state from the piney woods west throughout north central, central, midwest and southwest Texas, centering in the watershed of the Colorado River. It makes an excellent shade tree and is very valuable for the nut crop it bears. Often planted in "orchards." The pecan is a tall-growing tree, attaining heights of over 100 feet and when grown in the open forming a large rounded top of symmetrical shape.



PECAN (one-quarter natural size)

The outer **bark** is rough, hard, tight, but broken into scales; on the limbs, it is smooth at first but later tends to scale or divide as the bark grows old.

The **leaves** resemble those of the other hickories and the black walnut. They are made up of 9 to 17 leaflets, each oblong, toothed and long-pointed, and 4 to 8 inches long by about 2 inches wide.

The **flowers** appear in early spring and hang in tassels from 2 to 3 inches long. The **fruit** is a nut, 4-winged or angled, pointed, from 1 to 2 inches long, and one-half to 1 inch in diameter, borne in a husk which divides along its grooved seams when the nut ripens in the fall. The nuts, which vary in size and in the thickness of the shell, have been greatly improved by selection and cultivation and are sold on the market in large quantities.

The **wood** is heavy, hard, brittle, not strong, and of little value except for fuel.

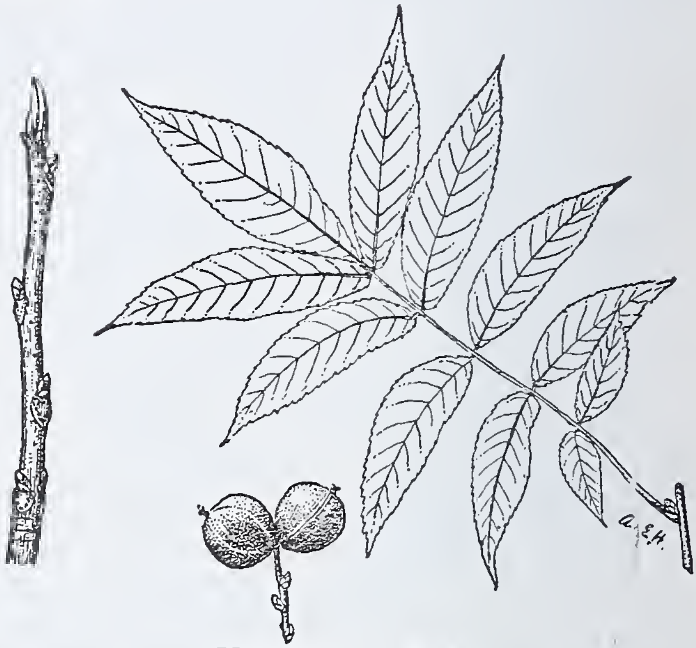
The bitter pecan (*Hicoria texana* Britt.) found in the valley of the lower Brazos, has tough, strong wood.

BITTERNUT HICKORY (Pignut)

(*Hicoria cordiformis* Britton)

THE bitternut or pignut hickory is a tall slender tree with broadly pyramidal crown, attaining a height of 100 feet and a diameter of 2 to 3 feet. It is found in the eastern part of the state on moist rich soils, but is nowhere very abundant.

The **bark** on the trunk is granite-gray, faintly tinged with yellow and less rough than in most of the hickories, yet broken into thin, plate-like scales. The winter buds are compressed, scurfy, bright yellow, quite different from those of its relatives.



BITTERNUT HICKORY

Twig, one-half natural size Leaf and fruit, one-third natural size

The **leaves** are alternate, compound, from 6 to 10 inches long, and composed of from 7 to 11 leaflets. The individual leaflets are smaller and more slender than those of the other hickories.

The **flowers** are of two kinds on the same tree. The **fruit** is about 1 inch long and thin-husked, while the nut is usually thin-shelled and brittle, and the kernel very bitter.

The **wood** is hard, strong and heavy, reddish brown in color. From this last fact it gets its local name of red hickory. It is said to be somewhat inferior to the other hickories, but is used for the same purposes.

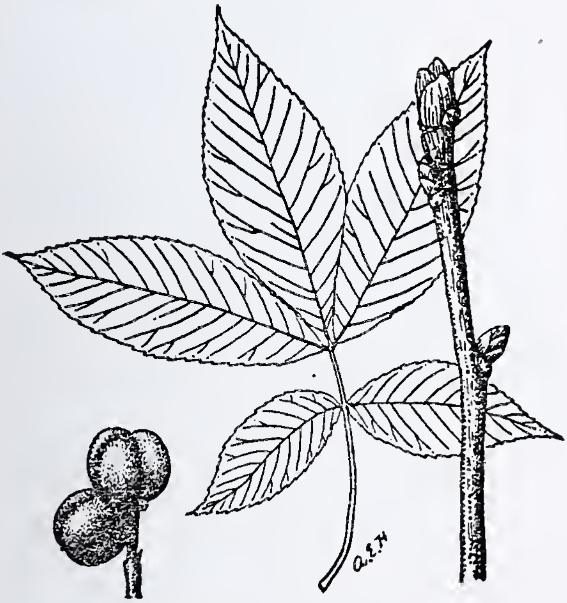
SCALY-BARK OR SHELL-BARK HICKORY

(*Hicoria ovata* Britton)

THE scaly-bark hickory, (also called shag-bark hickory), is found from Texas to Florida and north to the St. Lawrence River. Its edible nut is an article of commerce. It is a large tree of commercial importance reaching 100 feet in height and 2 to 3 feet in diameter. It thrives best on rich, damp soil.

The **bark** of the trunk is rougher than on other hickories, light gray and separating into thick plates which are only slightly attached to the tree. The terminal winter buds are egg-shaped, the outer budscales having narrow tips.

The **leaves** are alternate, compound, from 8 to 15 inches long and composed of 5, rarely 7 obovate to ovate leaflets. The twigs are smooth or clothed with short hairs.



SCALY-BARK HICKORY

Leaf, one third natural size Twig, one-half natural size

The **fruit** is borne singly or in pairs and is globular. The husk is thick and deeply grooved at the seams. The nut is much compressed and pale, the shell thin, and the kernel sweet. The **flowers** are of two kinds, opening after the leaves have attained nearly their full size.

The **wood** is heavy, hard, tough and very strong. It is used largely in the manufacture of agricultural implements and tool handles, and in the building of carriages and wagons.

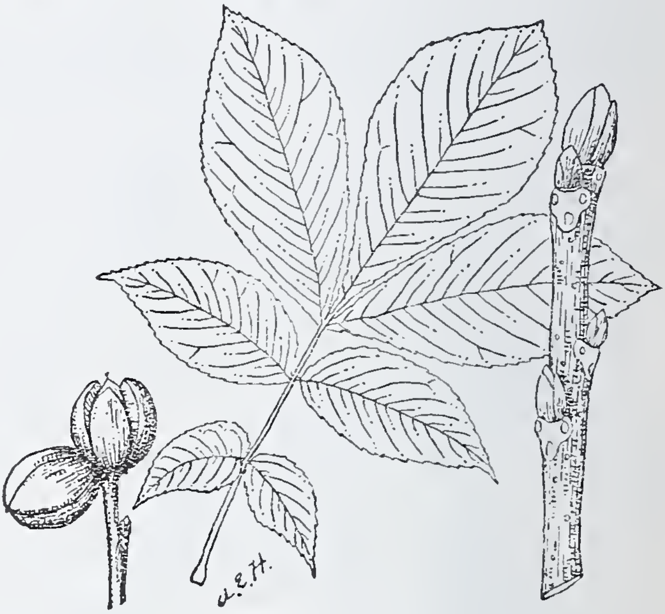
MOCKERNUT OR WHITE HICKORY

(*Hicoria alba* Britton)

THE mockernut, white or bigbud hickory is common on well-drained soils in the eastern part of the state. It is a short-limbed tree up to 60 feet high and 1 to 2 feet in diameter.

The **bark** is dark gray, hard, closely and deeply furrowed, often apparently cross-furrowed or netted. The winter buds are large, round or broadly egg-shaped, and covered with downy, hard scales. The recent shoots are short, stout and more or less covered with a downy growth.

The **leaves** are large, strong-scented and hairy, composed of 7 to 9 obovate to oblong, pointed leaflets which turn a beautiful yellow in the fall.



MOCKERNUT HICKORY

Leaf, one-fifth natural size Twig, two-thirds natural size

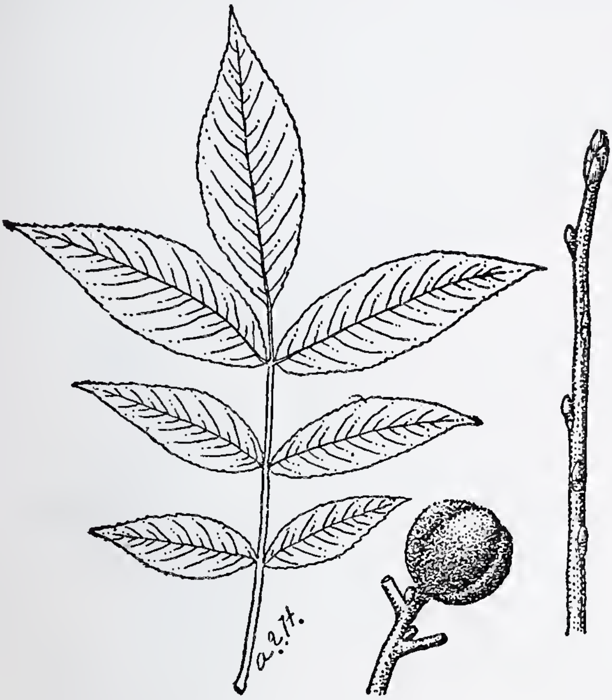
The **flowers** are of two kinds on the same tree; the male in three-branched catkins, the female in clusters of 2 to 5. The **fruit** is oval, nearly round or slightly pear-shaped with a very thick, strong-scented husk which splits nearly to the base when ripe. The nut, of varying form, is sometimes 4 to 6 ridged; light brown, with a very thick shell and small, sweet kernel.

The **wood** is heavy, hard, tough and strong; it is white excepting the comparatively small, dark-brown heart, hence the name white hickory. It is used for vehicle parts, handles and picker-sticks. It furnishes the best of fuel.

BLACK HICKORY

(*Hicoria buckleyi* Dur.)

THIS is a common hickory in East Texas to the valley of the Nueces River, growing on hillsides and sandy upland. It is distinguished by its obovoid fruit, and by its rusty brown hairs found on the young leaves and branches. It forms a tree 60 to 75 feet high, with a trunk 2 feet in diameter.



BLACK HICKORY
Leaf, one-quarter natural size Fruit, one-third natural size
Twig, three-quarters natural size

The **bark** is dark gray or nearly black, deeply divided into rough ridges, or it may be irregularly fissured and separating into thin scales. The winter buds are ovoid and covered with rusty hairs mixed with silvery scales.

The **leaves**, 8 to 12 inches long with 5 to 7, usually 7, leaflets and rusty-hairy slender leaf stalks, are dark green, lustrous above; much paler beneath. The **flowers** are similar to other hickories.

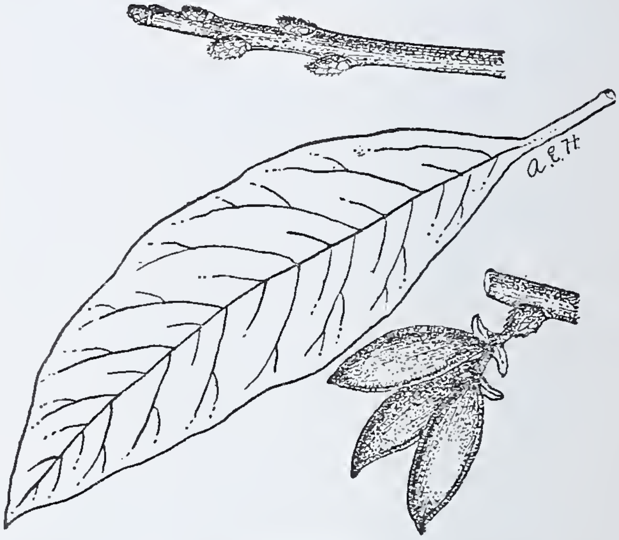
The **fruit** is obovoid, narrowed or abruptly contracted into a short stalk at the base with a husk one-twelfth to one-sixth inch thick, splitting to the middle or nearly to the base. The sweet-seeded **nut** is nearly obovoid to oblong rounded at the ends, compressed and slightly four-angled with a shell one-sixth to one-fifth inch thick.

The hard, brittle **wood** is used chiefly for fuel.

CORK WOOD

(*Leitneria floridana* Chapm.)

THIS lightest of all native woods in the United States grows in river swamps near the Gulf, about the mouth of the Brazos River. It is a small tree reaching a height of 20 feet, or a shrub, depending upon the location and natural conditions. The base is usually swollen. From it a straight gradually tapering trunk rises, crowned with a loose open-topped head. The young branchlets are coated with hairs which later drop, leaving a smooth dark red-brown stem.



CORK WOOD

Leaf, one-half natural size

Fruit and winter twig natural size

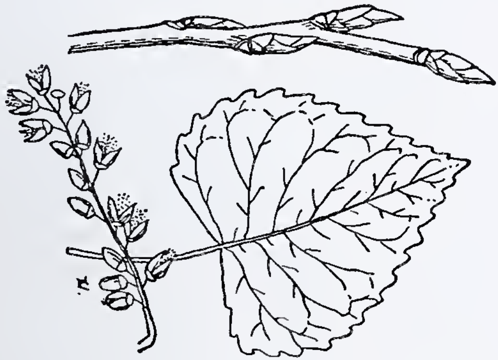
The **leaves** are from 4 to 6 inches in length and about 2 inches in width, borne on stems an inch or two long. The leaves are shiny above and usually scattered on the stem.

The **flowers** are in catkins of two kinds or sexes, the male about 1½ inches long, the female about ¾ inch long. Both kinds are borne on the same tree and appear about the first of March. The **fruit** is solitary or in clusters of 2 to 4, each about ½ inch long, and ripens when the leaves are about one-half grown. The **wood** is soft, exceedingly light, generally uniform in texture and of a pale yellow color. It is used in place of cork for floats for fishing nets.

COTTONWOOD

(*Populus deltoides virginiana* Sudw.)

THE cottonwood, or Carolina poplar, is found along streams throughout the state. The tree is easily propagated by cuttings and grows rapidly, hence it has been widely planted to get shade quickly. For this purpose, however, the tree is unsatisfactory, because it begins to shed the leaves by midsummer; the "cotton" from the female, or seed-bearing tree is often a nuisance; the soft wood is easily broken by winds; and the rank growth of the roots often results in stopping drain pipes and cracking and lifting sidewalks.



COTTONWOOD

Leaf, one-half natural size
Twig, one-third natural size

The **leaves** are simple, alternate, broadly ovate or triangular, pointed, square at the base, and coarsely toothed on the edges, 3 to 5 inches across each way, covered with soft white hairs on the under side, supported by flattened slender stems, 2 to 3 inches long. The winter buds are covered with chestnut-brown, resinous scales. The **flowers** are in catkins of two kinds, male and female, and appear before the leaves. The **fruit** containing the seed has a cluster of white silky hairs, which carries it for long distances.

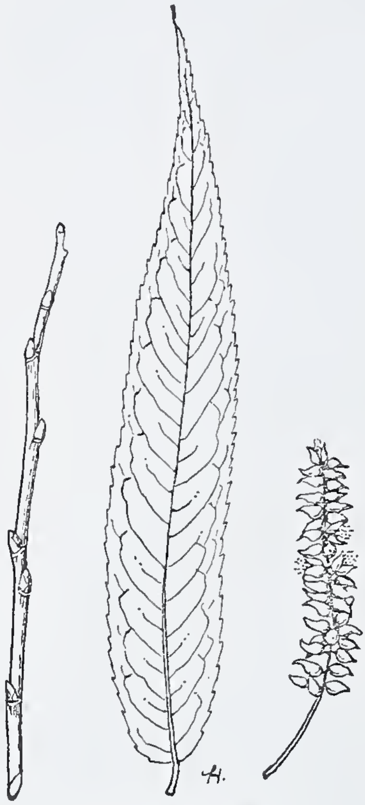
The **wood** is soft, light-weight, warps easily upon drying, but is used for many purposes, sometimes as a substitute for yellow poplar and linden.

In western Texas occur two other species. One of these *P. texana* with long pointed leaves, is found over the Panhandle.

BLACK WILLOW

(*Salix nigra* Marshall)

THE black willow is found along streams throughout the state. It rarely comes to be over 50 feet in height and is frequently found growing singly or in clumps along the water courses. In winter the easily separable, bright reddish brown or golden, naked twigs are quite conspicuous.



BLACK WILLOW
Two-thirds natural size

The leaves are from 3 to 6 inches long and less than one-half an inch wide; the tips are very much tapered and the entire margins finely toothed. The leaves are bright green on both sides, turning pale yellow in the early autumn.

The flowers are in catkins, the male and female on separate trees.

The fruit is a pod bearing numerous minute seeds which are furnished with long silky down, enabling them to be blown long distances.

The bark is deeply divided into broad, flat ridges which separate into thick plate-like scales. On old trees it becomes very shaggy. In color it varies from light brown, tinged with orange, to dark brown or nearly black.

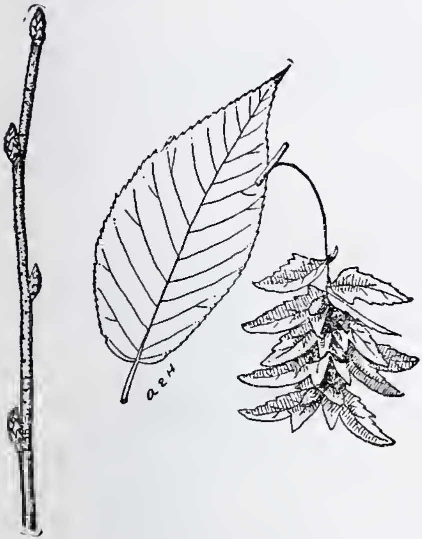
The wood is soft, light and not strong. A high grade of charcoal, used in the manufacture of gunpowder, is obtained from willow wood, and it is the chief wood used in manufacture of artificial limbs.

There are many species, or kinds, of willows not easily distinguished. They are of high value in checking soil erosion and waste along stream banks, for which purpose they should be more extensively grown.

BLUE BEECH (Hornbeam)

(*Carpinus caroliniana* Walt.)

BLUE beech, or hornbeam, also known as ironwood and water beech, is a small, slow-growing, bushy tree with a spreading top of slender, crooked or drooping branches. It is found along streams and in low ground, usually in the shade of other trees. Its height is usually from 20 to 30 feet and its diameter 4 to 8 inches, although it sometimes grows larger. The trunk is fluted with irregular ridges extending up and down the tree. The bark is light brownish gray to dark bluish gray in color, sometimes marked with dark bands extending horizontally on the trunk.



BLUE BEECH
Twig, one-half natural size
Leaf, one-third natural size

The **leaves** are simple, alternate, oval, long-pointed, doubly toothed along the margin, 2 to 3 inches in length. They resemble those of the black or sweet birch, but are smaller.

The **flowers** are borne in catkins separately on the same tree; the male catkin about 1½ inches long, the female, about ¾ of an inch, with small, leaf-like, three-lobed green scales. The **fruit** is a nutlet about one-third of an inch long. It falls, attached to the leaf-life scale which acts as a wing in aiding its distribution by the wind.

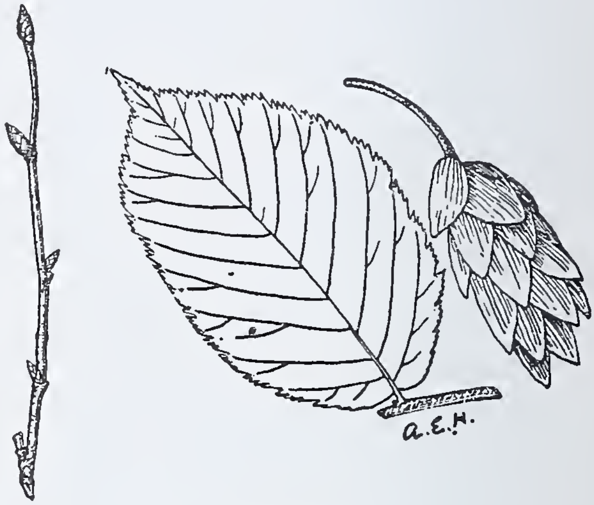
The **wood** is tough, close-grained, heavy and strong. It is sometimes selected for use for levers, tool handles, wooden cogs, mallets, wedges, etc. The tree is of little commercial importance and often occupies space in the woods that should be utilized by more valuable species.

IRONWOOD (Hop Hornbeam)

(*Ostrya virginiana* (Miller) Koch.)

THE tree gets its common names from the qualities of its wood and the hop-like fruit. It is a small, slender, generally round-topped tree, from 20 to 30 feet high and 7 to 10 inches in diameter. The top consists of long slender branches, commonly drooping toward the ends. It is found mostly on rather dry soils throughout the uplands of the eastern part of the state.

The **bark** is mostly light brown or reddish brown, and finely divided into thin scales by which the tree, after a little acquaintance, can be easily recognized.



IRONWOOD

Twig, one-half natural size

Leaf, one-third natural size

The **leaves** are simple, alternate, generally oblong with narrowed tips, sharply toothed along the margin, sometimes doubly toothed, from 2 to 3 inches long.

The **flowers** are of two kinds on the same tree; the male, in drooping catkins which form the previous summer, the female, in erect catkins on the newly formed twigs. The **fruit**, which resembles that of the common hop vine, consists of a branch of leafy bracts 1 to 2 inches long containing a number of flattened ribbed nutlets.

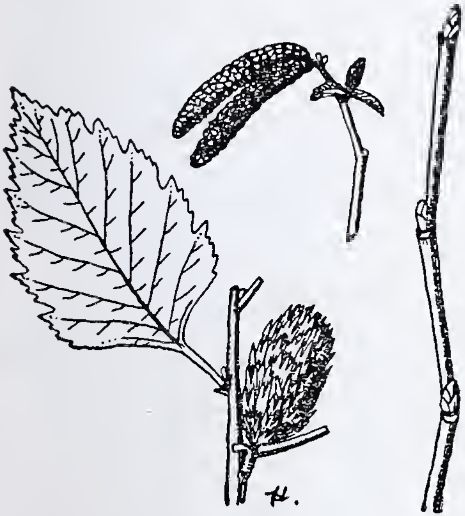
The **wood** is strong, hard, durable, light brown to white, with thick pale sapwood. Often used for handles of tools, mallets and other small articles.

RIVER BIRCH (Red Birch)

(*Betula nigra* L.)

THIS is the only native birch found at low elevations in the South. It occurs in East Texas, where, as the name implies, it is at home along water courses, and inhabits the deep, rich soils along the borders of streams, ponds, lakes, and swamps.

The **bark** provides a ready means of distinguishing this tree. It varies from reddish brown to cinnamon red in color, and peels back in tough papery layers. These layers persist on the trunk, presenting a very ragged and quite distinctive appearance. Unlike the bark of our other birches, the thin papery layers are usually covered with a gray powder. On older trees, the bark on the main trunk becomes thick, deeply furrowed, and of a reddish brown color.



RIVER BIRCH
One-half natural size

The **leaves** are simple, alternate, 2 to 3 inches long, more or less oval in shape, with double-toothed edge. The upper surface is dark green and the lower a pale yellowish green.

The **flowers** are in catkins, the two kinds growing on the same tree. The **fruit** is cone-shaped about one inch long, and densely crowded with little winged nutlets that ripen from May to June.

The **wood** is strong and fairly close-grained. It has been to some extent used in the manufacture of wooden-ware, in turnery and for wagon hubs. Since, however, this tree is scattered in its distribution and mostly confined to the banks of streams, it does not figure largely in commercial lumbering, but is cut chiefly for firewood.

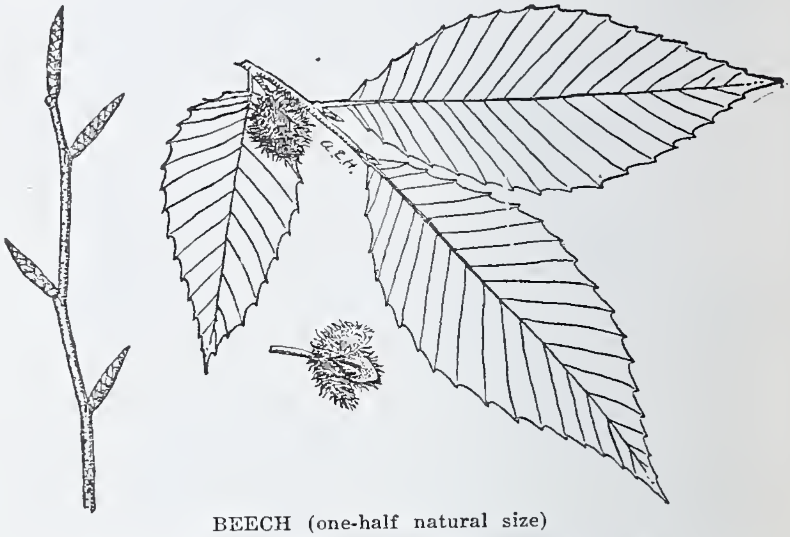
BEECH

(*Fagus grandifolia* Ehrh.)

BEECH is found in east Texas to the Trinity River, on the bottom land of streams and the margins of swamps. It is one of the most beautiful of all trees, either in summer or winter.

The simple, oval leaves are 3 to 4 inches long, pointed at the tip, and coarsely toothed along the margin. When mature, they are almost leathery in texture. The beech produces a dense shade. The winter buds are long, slender and pointed.

The **bark** is, perhaps, the most distinctive characteristic, as it maintains an unbroken, light gray surface throughout its life. So tempting is this smooth expanse to the owner of a jackknife that the beech has been well designated the "initial tree."



BEECH (one-half natural size)

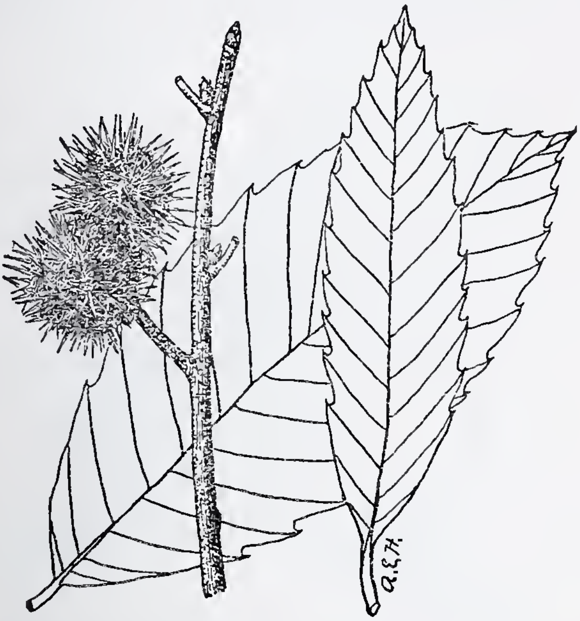
The little, brown, three-sided beech **nuts** are almost as well known as chestnuts. They form usually in pairs in a prickly burr. The kernel is sweet and edible, but so small as to offer insufficient reward for the pains of biting open the thin-shelled husk.

The **wood** of the beech is very hard, strong, and tough, though it will not last long on exposure to weather or in the soil. The tree is of economic importance as a lumber tree, the wood being used for furniture, flooring, carpenters' tools, and novelty wares.

CHINQUAPIN

(*Castanea pumila* (Linnaeus) Miller)

THIS small tree occurs in the eastern part of the state to the Neches River, on lowlands and dry uplands. Usually under 10 inches in diameter and less than 30 feet high. The trunk is short, straight and bears a rounded head of slender, spreading branches.



CHINQUAPIN (one-half natural size)

The **leaves** are 3 to 4 inches long, 1 to 2 inches wide, coarsely and sharply toothed and pointed, bright yellow-green, firm and thick. The **flowers** are in catkins, and the **fruit** ripens in the late summer or fall. The nut, is borne singly in a burr measuring a little more than an inch in diameter. It is rounded, dark chestnut-brown, shiny; the thin coat, lined inside with fine whitish hairs, contains a sweet kernel, prized for food.

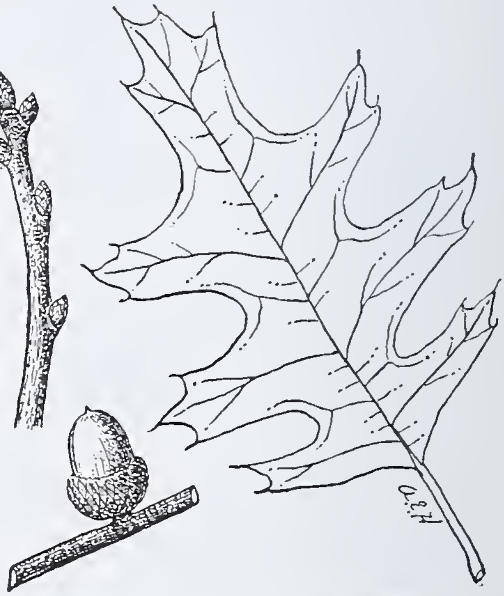
The **wood** is light, hard, strong, coarse-grained; suitable for fence posts, cross-ties, and fuel; but, because of its small size and comparative scarcity, it is of little economic importance.

Castanea alnifolia floridana Sarg. is found as a tree up to 24 inches diameter and 50 feet high on sandy ridges near Conroe, Montgomery County, also in Rusk County and probably elsewhere in east Texas. Leaves dark green. Scattered star-like clusters of coarse spines on the fruit as shown above.

TEXAS RED OAK

(*Quercus texana* Buckley)

TEXAS red oak is found on dry limestone hills and ridges, and in the more fertile soils at their base, in central and west Texas to the Edwards Plateau. Rarely over 30 feet tall or 10 inches in diameter. A variety of this oak, *stellapila* Sarg., is found above Fort Davis, Jeff Davis county.



TEXAS RED OAK (two-thirds natural size)

The leaves are 2½ to 3 inches wide, 3 to 3½ inches long; widest above the middle; divided into 5 to 7 lobes, with the terminal lobe three-lobed; dark green and shiny above, pale-shiny below; petiole slender, about inch long.

The fruit is short-stemmed, usually single, one-quarter to three-quarters inch long and broad, varying to nearly one inch long and one-third inch broad, set in a cup that covers one-third or less of the fruit, reddish brown and often streaked with dark lines.

The bark is light brown, red-tinged, deeply ridged and broken into plate-like scales.

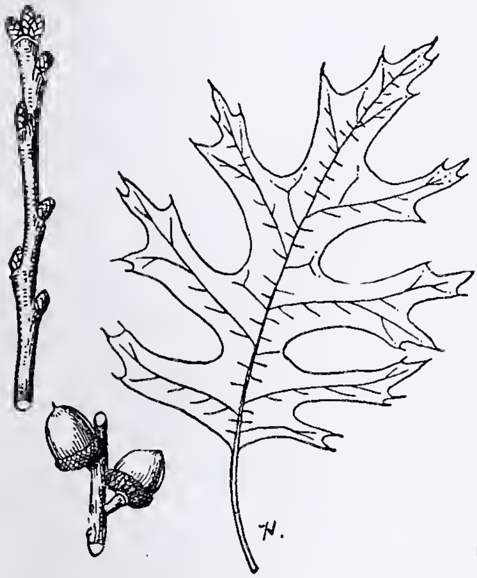
The **wood** is most useful for fuel.

This tree is closely related to the next species, the red oak of East Texas which is a much larger tree with thicker, more yellowish green leaves.

RED OAK (Spotted Oak, Texas Oak)

(*Quercus shumardii* Buckl., formerly *Q. texana* Sarg.)

THIS tree, closely related to the northern red oak, is found in the eastern part of the state on well drained alluvial soils and on fertile slopes. It forms a tall, wide-spreading, rather open head. The **bark** is dark, rough, divided into ridges, and usually from 1 to 1½ inches thick. It does not usually compose the principal part of any forest stand, but it more often occurs as individuals. It attains a diameter of over 3 feet and a height of more than 100 feet but is usually smaller.



RED OAK
Twig, one-half natural size
Leaf, one-third natural size

The **leaves** are simple, alternate, 6 to 8 inches long by 4 to 5 inches wide, mostly seven-lobed or deepen-lobed, and each one slightly lobed or deep-toothed. They resemble those of the scarlet oak and are smaller and are more deeply lobed than those of the black oak.

The **fruit** is a small acorn, about two-thirds of an inch in diameter and three-quarters of an inch long, set in a shallow cup.

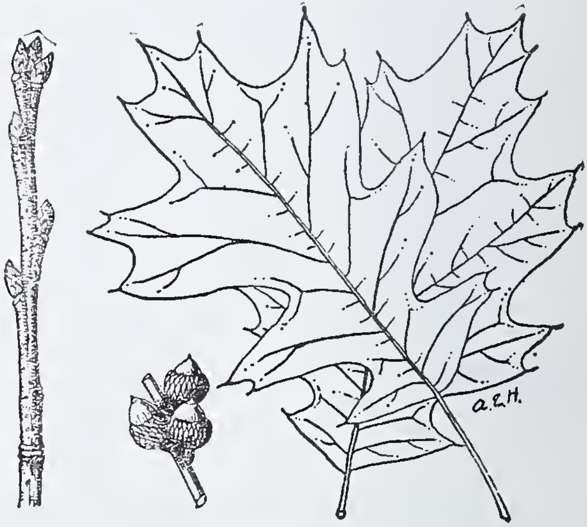
The **wood** is heavy, hard, strong, close-grained, and light-reddish brown in color. It is used much as other red oak.

The variety *schneckii* Sarg., which has a rougher, dark grayish bark and deeper cups to the acorns, is the more common form in Texas.

BLACK OAK

(*Quercus velutina* La Marck)

THE black oak, also called yellow oak, reaches 80 feet in height and 1 to 3 feet in diameter. It grows in east Texas, and in the hills and canyons near the mouth of the Pecos River. The crown is irregularly shaped and wide, with a clear trunk for 20 feet or more on large trees. The **bark** on the very young trunks is smooth and dark brown, but soon becomes thick and black with deep furrows and rough broken edges. The bright yellow color and bitter taste of the inner bark are distinguishing characteristics.



BLACK OAK

Twig, one-half natural size — Leaf, one-third natural size

The **leaves** are alternate, simple, 5 to 10 inches long and 3 to 8 inches wide, shallow or deeply lobed, the shape varying greatly. When mature, the leaves are dark green and shiny on the upper surface, pale on the lower, more or less covered with down, and with conspicuous rusty brown hairs in the forks of the veins.

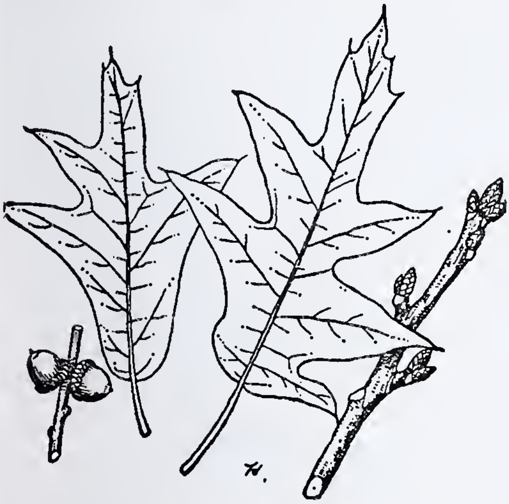
The **fruit** matures the second season. The light brown nut is from one-half to one-inch long, more or less hemispherical in shape, and from one-half to three-quarters enclosed in the thin, dark brown, scaly cup. The yellow kernel is very bitter.

The **wood**, used and marketed as red oak, is hard, heavy, strong, coarse-grained, and checks easily. It is a bright red brown with a thin outer edge of paler sapwood.

SOUTHERN RED OAK

(*Quercus rubra* Linn., formerly *Q. digitata* (Marshall) Sudw.)

THE southern red oak, commonly known as red oak and formerly called Spanish oak, usually reaches a height of 80 feet and a diameter of 3 feet, though larger trees are often found. It grows on dry hills in the eastern part of the state to the Brazos River. There are two swamp-loving varieties, *pagodaefolia* (Elliott) Ashe and *leucophylla* Ashe, which differ by having more numerous lobes of the leaves. Its large spreading branches form a broad, round, open top. The **bark** is rough, though not deeply furrowed, and varies from light gray on younger trees to dark gray or almost black on older ones.



SOUTHERN RED OAK
Leaf and Fruit, one-third natural size
Twig, one-half natural size

The **leaves** are of two different types: (1) irregular-shaped lobes, mostly narrow, bristle-tipped, the central lobe often the longest; or more commonly in East Texas (2) pear-shaped with 3 rounded lobes at the outer end. They are dark lustrous green above and gray downy beneath

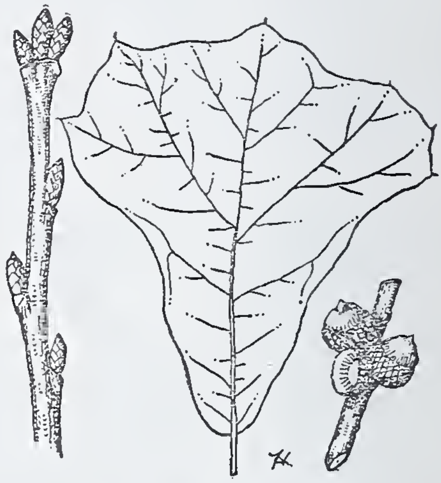
The **flowers** appear in April while the leaves are unfolding. The fruit ripens the second year. The small rounded acorn, about half an inch long, is set in a thin saucer-shaped cup which tapers to a short stem.

The **wood** is heavy, hard, strong, coarse-grained, and is less subject to defects than most other red oaks. It is used for rough lumber and for furniture, chairs, tables, etc. It is a desirable timber tree, especially on the poorer, drier soils, and valuable for shade and ornamental use. The bark is rich in tannin.

BLACK JACK OAK

(*Quercus marilandica* Muench.)

THE occurrence of blackjack oak is said to indicate poor soil. It is certain that it often occurs on dry or poorly drained gravelly clay, or sandy upland soils where few other forest trees thrive. This perhaps accounts chiefly for its slow rate of growth. It is found in those parts of the state that support a natural tree growth, as far west as Callahan county. The tree sometimes reaches a height of 50 or 60 feet and a diameter of 16 inches, but it is usually much smaller. Its hard, stiff, drooping branches form a dense crown which usually contains many persistent dead twigs. The bark is rough, very dark, often nearly black, and broken into small, hard scales or flakes.



BLACK JACK OAK
Twig, two-thirds natural size Leaf and Fruit, one-third natural size

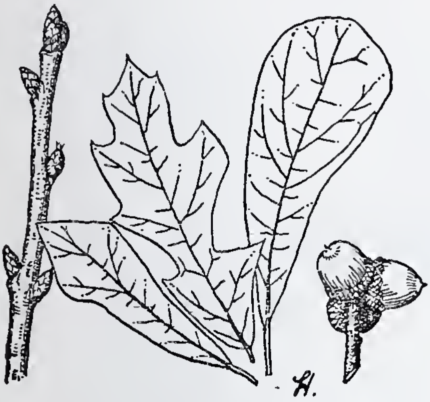
The **leaves** are of leathery texture, dark green on the upper surface, lighter underneath, broadly wedge-shaped, 4 to 10 inches long and about the same in width. The **fruit** is an acorn about three-quarters of an inch long, yellow-brown and often striped, inclosed for half its length or more in a thick light-brown cup.

The **wood** is heavy, hard and strong; when used at all, it is used mostly as firewood.

WATER OAK (Pin Oak)

(*Quercus nigra* L.)

THE water oak is found native along the borders of swamps and streams and on rich bottom lands in Texas as far west as the Colorado River. It has been widely planted along streets and in parks as a shade tree. When fully grown this tree reaches a height of about 80 feet and a diameter of from one to over 3 feet. The **bark** is smooth, light brown tinged with red, and has many smooth thin scales over the surface. Water oak can be best distinguished from the willow oak —a close associate, but longer-lived— by the differences in the general shape and size of leaves.



WATER OAK
Leaf, one-third natural size
Twig, one-half natural size

The **leaves** are simple, quite variable in shape, mostly oblong, broader near the point, and narrower at the base, giving a wedge-shaped effect, often slightly three-lobed at the outer end, thin, and of a dull bluish green color, paler below than above; mostly smooth, and usually two to three inches long and one to two inches wide; remain green for some time and gradually fall from the tree during the winter.

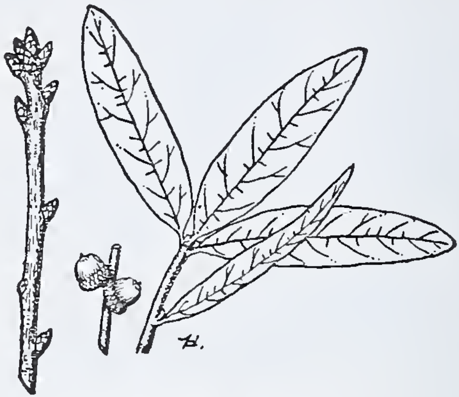
The **flowers** appear in April when the leaves begin to unfold. The **fruit**, or **acorn**, matures at the end of the second season. The **acorn** is from one-half to two-thirds of an inch in length and nearly as broad, light brown or yellowish brown and often striped, enclosed at the base only in a thin saucer-shaped cup.

The **wood** is heavy, hard, and strong, light brown in color, with lighter-colored sapwood. The trees are utilized chiefly for piling, crossties and fuel.

WILLOW OAK

(*Quercus phellos* L.)

THE willow oak, also called water oak, and pin oak, occurs in the eastern part of the state to the Brazos River. It is most often found in lowlands and along the borders of rivers and swamps, but often also on rich sandy uplands. It is a beautiful and long-lived tree, and desirable for roadsides, lawns and parks.



WILLOW OAK
Twig, one-half natural size
Leaf, one-third natural size

The slender willow-like **leaves,** on a tree whose habit of growth is manifestly that of an oak, make the tree easy to identify in the forest. The leaves are 2 to 4 inches long and one-half to 1 inch wide, with smooth, light green and shiny above, but dull and usually smooth below; alternate in arrangement on the twig and borne on a short stout stem. The **bark** is generally smooth and of a reddish brown color; with age, the bark becomes slightly roughened and divided by narrow ridges.

The small **acorns,** closely set along the stem, mature at the end of the second year. The nut is a light brown hemisphere, about one-half inch in diameter, its base scarcely enclosed in the shallow, reddish-brown cup. The nuts are eaten as food by bluejays, grackles (black birds), and several other species of birds, as well as by rodents.

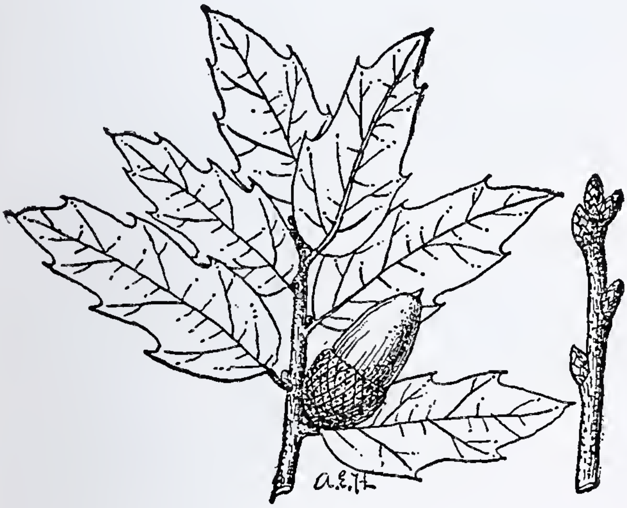
The **wood** is not separated commercially from other species in the red oak group. It is a heavy, strong, rather coarse-grained, light brown tinged with red, and not durable when exposed to the weather. It is used locally for crossties, bridge planks, barn sills, and general construction.

EMORY OAK

(*Quercus emoryi* Torr.)

IN the Davis and Chisos mountains occurs this interesting oak with glossy, spiny, "holly-like" leaves and sweet edible acorn. A small round-topped tree up to 30 or 40 feet in height, the emory oak has drooping branches and slender, decidedly reddish branchlets.

The **leaves** are oblong, pointed, smooth or sharply toothed along the margin, thick, very glossy green, about 2 inches long and less than 1 inch wide, and evergreen.



EMORY OAK (three-fourths natural size)

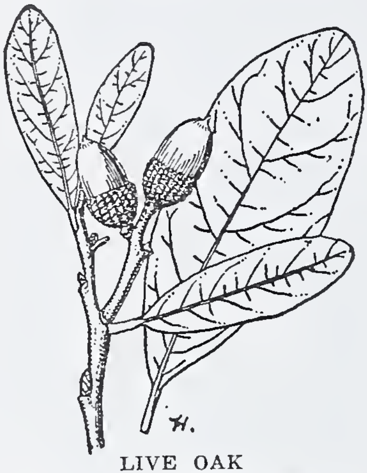
The acorn, or **fruit**, is borne close to the branchlet. It is oblong in shape, one-half inch and over in length, the dark brown or nearly black nut enclosed for about one-third its length in a narrow cup. The latter is lined with dense gray fuzz or "tomentum."

The **wood** is heavy, strong, somewhat brittle, close-grained, dark brown, with light brown sapwood tinged with red. The acorns are an important article of food for Indians and Mexicans.

LIVE OAK

(*Quercus virginiana* Mill.)

THE live oak range extends from southeastern Virginia through the lower Coastal Plain of the Atlantic and Gulf States; in Texas, from the mouth of the Rio Grande north to the Red River and west to the Guadalupe mountains, also in southern Mexico and Cuba. It is a tree of striking character from its wide-spreading habit; sometimes reaching more than 100 feet in spread; with a short, stout trunk, 3 to 4 feet in diameter, dividing in several large limbs with nearly horizontal branches, forming a low, dense, round-topped head. Its height is commonly from 40 to 50 feet. The bark on the trunk and large branches is dark brown tinged with red, and slightly furrowed. It grows to largest size on the rich hammocks and low ridges near the coast and only a few feet above the water level. Although slow-growing, it is one of the most desirable trees for roadside and ornamental planting throughout most of its range. It is one of the very few trees that are apparently immune to cotton root-rot. It is long-lived.



LIVE OAK
Two-thirds natural size

The leaves are simple, evergreen, thick, leathery oblong, smooth above, pale and silvery white beneath; from 2 to 4 inches in length and 1 to 2 inches in breadth.

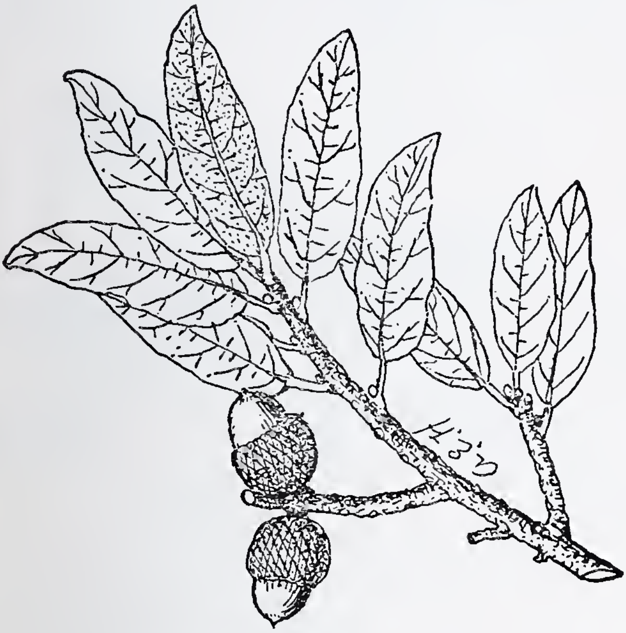
The fruit is an acorn about an inch long and one-third inch wide, borne on a long stem or peduncle; it is oblong, dark brown and lustrous, and set in a top-shaped, downy cup of a light reddish brown color.

The wood is very heavy, hard, strong and tough, light brown or yellow, with nearly white, thin sapwood. It was formerly largely used, and still is occasionally, for ships' knees in building wooden ships.

SHIN OAK

(*Quercus mohriana* Rybd.)

OVER a wide section of central Texas are found four or more species of "shin" oaks, so called from their low-growing bushy habit or development. These are considerably alike in foliage and fruit.



SHIN OAK (natural size)

The leaves of the above small-tree species of shin oak are elliptical, pointed or rounded at the end, smooth or wavy or sometimes lobed or slightly toothed along the margin. They are thick, gray-green, dense hairy beneath, and about 3 inches long by 1 inch wide.

The acorn, or **fruit,** occur solitary or in pairs, on very short stems. They are small, deeply enclosed in a relatively heavy cup, thin toward the outer end.

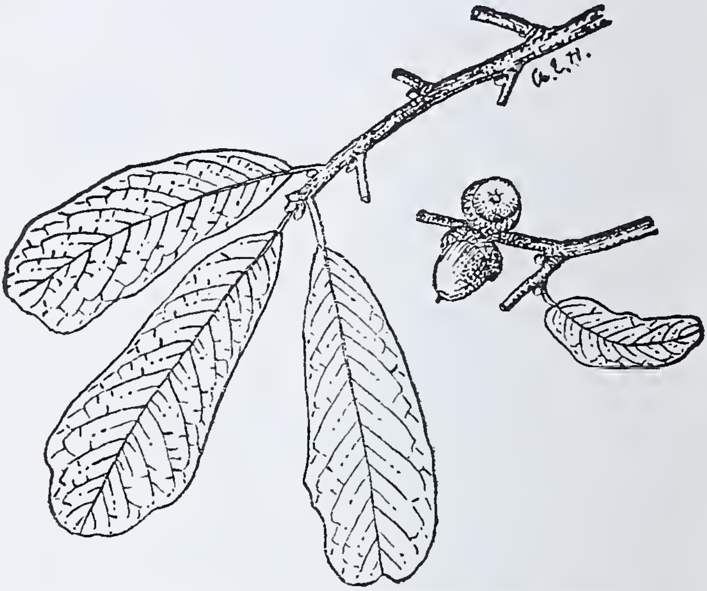
The tree has a thin, pale-colored bark, rough by deep furrows running up and down the tree. Little is known about the **wood,** which indicates that it has no specific or important uses.

DURAND WHITE OAK

(*Quercus durandii* Buckl.)

THIS oak is found on the well-drained soil of river bottoms from the coast region of east Texas to the bottoms of the Guadalupe River (Victoria county) and inland to San Saba county, and the neighborhood of Dallas.

It forms a tree 60 to 90 feet high with a tall trunk 2 to 3 feet in diameter, comparatively small branches, the lower horizontal, the upper ascending, forming a dense, round-topped, handsome head.



DURAND WHITE OAK (one-half natural size)

The **bark** is thin, light gray or nearly white and broken into loose appressed scales.

The **leaves** are thin, smooth on the edges, three lobed toward the tip, or irregularly lobed, the three forms appearing on different branches of the same tree, and 2½ to 7 inches long, falling late in the autumn.

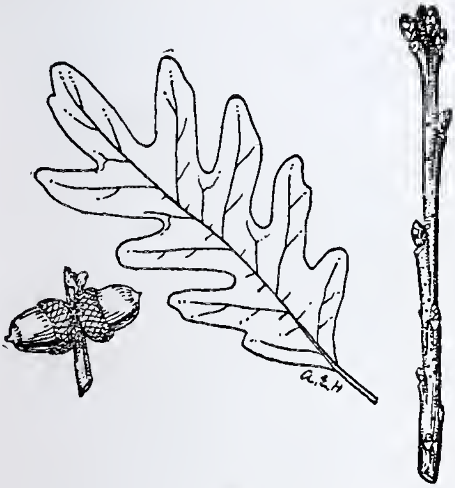
The **fruit** is an acorn, solitary or in pairs, on a very short stem, nearly egg-shaped, pale chestnut brown, shining, one-half to two-thirds of an inch long, and barely enclosed at the base in the thin saucer-shaped cup.

The **wood** is hard and heavy and is used largely as fuel.

WHITE OAK

(*Quercus alba* L.)

WITHIN its natural range, which includes practically the entire eastern half of the United States, the white oak is one of the most important timber trees. Found in east Texas to the Brazos River, it commonly reaches a height of 80 feet and a diameter of 3 feet. It is found on a wide variety of soils. Grown in a dense stand it has a long, straight trunk, free of side branches for over half of its height. In the open, it develops a short trunk and broad crown with far-reaching limbs.



WHITE OAK
Twig, one-half natural size
Leaf and Fruit, one-third natural size

The **leaves** are alternate, simple, 5 to 9 inches long and about half as broad. They are deeply divided into 5 to 9 rounded, finger-like lobes. The young leaves are a soft silvery gray or yellow or red while unfolding, becoming later bright green above and much paler below. The **fruit** is an acorn maturing the first year, three-quarters to one inch long, light brown, about one-quarter enclosed in the warty cup. It is relished by hogs and other livestock. The **bark** is thin, light ashy gray and covered with loose scales or broad plates.

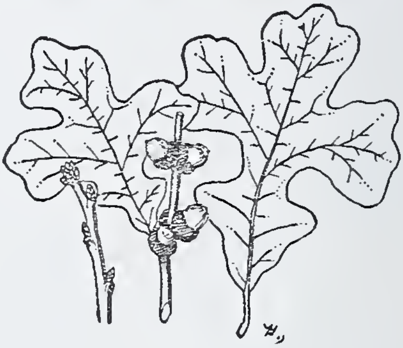
The **wood** is heavy, strong, hard, tough, close-grained, durable, and light brown in color. The uses are many, including construction, shipbuilding, tight cooperage, furniture, wagons, implements, interior finish, flooring, and fuel. Notwithstanding its rather slow growth, white oak is valuable for forest, highway and ornamental planting.

POST OAK

(*Quercus stellata* Wang., formerly *Q. minor* (Marshall) Sarg.)

THE post oak is usually a medium-sized tree, with a rounded crown, commonly reaching a height of 50 feet and a diameter of 1 foot, but sometimes considerably larger. It is the common oak in central Texas and occurs frequently in east Texas. It occurs most abundantly on the poorer sandy upland soils.

The **bark** is rougher and darker than the white oak and broken into smaller scale. The stout young twigs and the leaves are coated at first with a thick light-colored fuzz which soon becomes darker and later drops away entirely.



POST OAK (one-third natural size)

The **leaves** are usually 4 to 5 inches long and nearly as broad, deeply five-lobed with broad rounded divisions, the lobes broadest at the ends. They are thick and somewhat leathery, dark green and shiny on the upper surface, lighter green and rough hairy beneath.

The **flowers**, like those of the other oaks, are of two kinds on the same tree, the male in drooping clustered catkins, the female inconspicuous. The **fruit** is an oval acorn, one-half to 1 inch long, set in a rather small cup which may or may not be stalked.

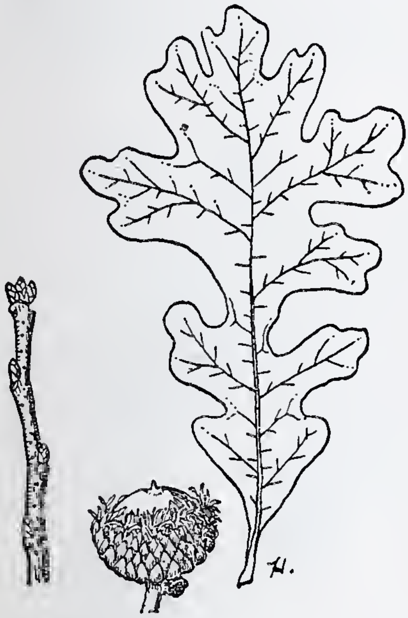
The **wood** is very heavy, hard, close-grained, light to dark brown, durable in contact with the soil. It is used for crossties and fence-posts, and occasionally for furniture and lumber.

Aside from the typical form, five varieties are found in the state. The variety *margaretta* Sarg. is the common post oak of eastern Texas.

BURR OAK (Mossy Cup Oak)

(*Quercus macrocarpa* Michx.)

THE burr oak occurs throughout the eastern part of the state and as far west as Callahan and Menard counties, in rich bottom lands along streams, or on rich hillsides along spring-fed ravines. The name alludes to the fringe around the cup of the acorn, which is sometimes very large. The tree usually has a broad top of heavy spreading branches and a relatively short body. In maturity it attains a diameter of 5 feet or more and a height of over 80 feet.



BURR OAK
One-third natural size

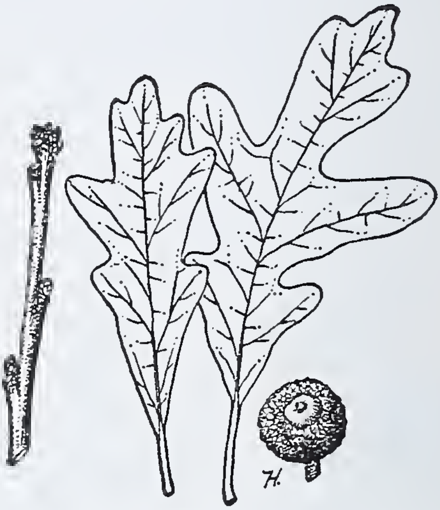
The **bark** is light-gray and is usually broken up into small narrow flakes. The **leaves** resemble some what those of the common white oak, but are much larger and have a pair of deep indentations on their border near the base, and wavy notches on the broad middle and upper portions of the leaf. They range range from 6 to 12 inches long and 3 to 6 inches wide. The **fruit**, or acorn, is a nut set deeply in the fringed cup. It is usually 1 inch or much more in diameter but varies widely in respect to size and the degree to which the nut is inclosed in the mossy fringed cup.

The **wood** is heavy, hard, strong, tough and durable. It is used for much the same purposes as the other white oaks—for lumber, crossties, and fuel.

OVERCUP OAK
(*Quercus lyrata* Walt.)

THE overcup oak, sometimes known as the swamp white oak and water white oak, becomes a large tree with small, often pendulous branches. It is found in moist, rich bottomland in east Texas to the Navasota River.

The **leaves** are 7 to 9 inches long, 1 to 4 inches broad, oblong, wider towards the point, narrowed at the base, dark green above, often whitish beneath, with 7 to 9 distinct pointed lobes. They frequently turn to a bright scarlet or to scarlet and orange in the fall. The **bark** is rough, flaky, gray tinged with red.



OVERCUP OAK
Leaf and Fruit one-third natural size Twig, two-thirds natural size

The **flowers** open with the unfolding of the leaves. The acorn, or **fruit**, ripens the first year. It is thoroughly characteristic of the species. The large rounded or somewhat flattened acorn, an inch or more across and one-half to 1 inch high, is nearly covered by the ovate or nearly spherical cup, which is thickened at the base but gradually grows thinner, often irregularly split at the margin of the cup. The name of the tree comes from this characteristic.

The **wood** is heavy, hard, strong and durable and is used for the same purposes as that of white oak.

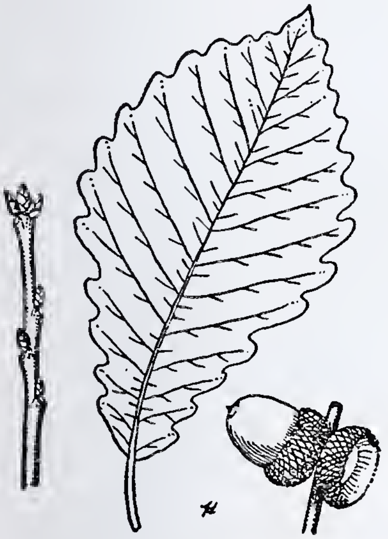
SWAMP CHESTNUT OAK

(Basket Oak, or Cow Oak)

(*Quercus prinus* L., formerly *Q. michauxii* Nutt.)

THIS tree is distinguished by having a wavy leaf-margin, large fruit which is sessile or very short stalked, and by the fact that it occurs in its greatest abundance in bottom lands. It is confined chiefly to the eastern part of the state as far as the Trinity River.

In the appearance of its bark and branches it closely resembles the ordinary white oak, but may be distinguished by means of the leaf and large acorn. The tree attains heights of about 100 feet and diameters of about 4 feet.



SWAMP CHESTNUT OAK
Twig, one-half natural size
Leaf and Fruit, one-third natural size

The **leaves** are oval, broader towards the point and notched on the edge somewhat like the chinquapin oak, but rounded instead of pointed. They vary from 4 to 8 inches in length, are downy beneath and turn a rich crimson in the fall. The **bark** is a very light gray, and on old trees is broken into broad flakes or divided into strips.

The acorn, or **fruit**, attains a diameter of more than an inch and a length of 1½ inches. The acorn which is a bright shiny brown and set in a rather shallow cup, is considerably larger than that of the white oak. It is frequently eaten by cows and this fact gives the tree one of its common names.

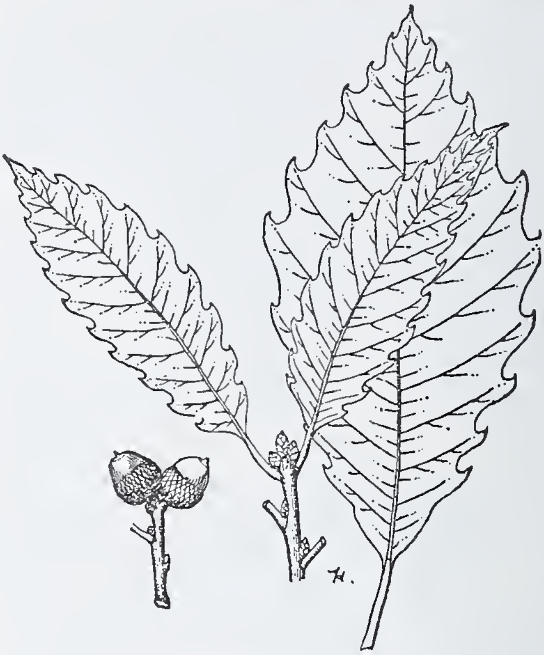
The **wood** is heavy, hard, tough, strong, and takes an excellent polish. It is used in manufacturing lumber, veneer, boards (shakes), tight cooperage; for fuel and fence-posts; and for making baskets.

CHINQUAPIN OAK

(*Quercus muhlenbergii* Engelm., formerly
Q. acuminata Houba.)

THIS oak, an excellent timber tree, occurs over the eastern part of the state and west to the Guadalupe River; also on the Guadalupe mountains. It grows on most classes of soil, in all moisture conditions except in swamps, and is a tenacious tree on shallow, dry limestone soil. The bark is light gray, and breaks up in to short narrow flakes on the main trunk and old limbs.

It reaches a height of 20 to 50 feet. The straight shapely trunk bears a round-topped head composed of small branches, which makes it an attractive shade tree.


CHINQUAPIN OAK
One-third natural size

The **leaves** are oblong, 3 to 6 inches in length, 1½ to 3 inches wide, equally toothed or notched on the edges, resembling the leaves of chestnut oak. The **fruit**, which ripens in the fall of the first season, is light to dark brown when ripe, and edible if roasted. This acorn is one-half to nearly one inch long, usually less than one inch in diameter set in a shallow cup.

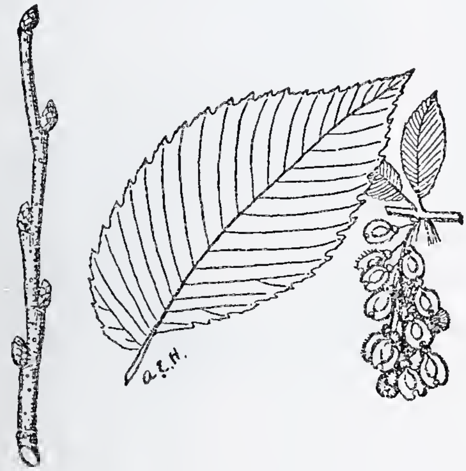
The **wood** is heavy, very hard, strong, durable, takes an excellent polish. It is used for cooperage, fencing, crossties, fuel, and occasionally for furniture.

The variety *brayi* Sarg. is found on the Edwards Plateau.

AMERICAN ELM (White Elm)

(*Ulmus americana* L.)

THE range of this famous American shade tree extends west to the Rocky Mountains and southward to Coke county, Texas. Within this vast area, it is generally common except in the high mountains and wet bottom lands. It reaches an average height of 60 feet and a diameter of 3 feet. The bark is dark gray, divided into irregular flat-topped, thick ridges, and is generally firm, though on old trees it tends to come off in flakes. An incision into the inner bark will show alternate layers of brown and white.



AMERICAN ELM
Twig, one-half natural size Leaf, one-third natural size

The **leaves** are alternate, simple, 4 to 6 inches long, rather thick, somewhat one-sided, doubly toothed on the margin, and generally smooth above and downy below. The leaf veins are very pronounced and run in parallel lines from the midrib to leaf-edge.

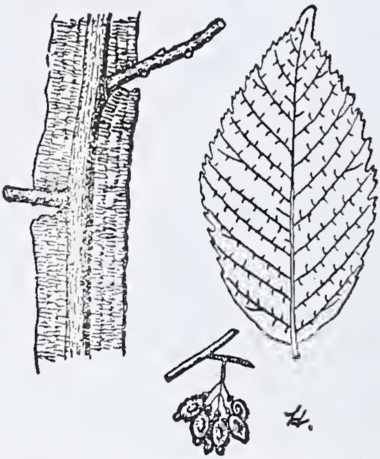
The **flowers** are small, perfect, greenish, on slender stalks, sometimes an inch long, appearing before the leaves in very early spring. The **fruit** ripening in the spring is a light green, oval shaped samara (winged fruit) with the seed portion in the center and surrounded entirely by a wing. A deep notch in the end of the wing is distinctive of the species.

The **wood** is heavy, hard, strong, tough, and difficult to split. It is used for hubs of wheels, saddle trees, boats and ships, barrel hoops, and veneer for baskets and crates.

WINGED ELM

(*Ulmus alata* Michx.)

THE winged elm gets its common name from the thin corky growth or "wings," usually found on smaller branches. On large rapidly-growing trees the wings are often absent. It usually occurs in eastern Texas south to the valley of the Guadalupe River, on dry uplands, but often in moist soils along streams and swamps. It grows rapidly in moist situations, and at the same time is a good tree for planting along roadsides in dry poor locations. It is comparatively free from disease, though not long-lived. This elm is a medium-sized tree of 40 to 50 feet in height and rarely as large as 2 feet in diameter. It forms a rather open, round-topped head.



Leaf and Fruit, one-third natural size. Twig, one-half natural size.

The **bark** is light brown tinged with red, and divided into irregular flat ridges and fissures.

The **leaves** are simple, alternate, 2 to 4 inches long and 1 to 2 inches broad, coarsely double-toothed, thick, dark green and smooth above, and pale and softly downy below. They are small and pointed at the tip, which distinguishes them from the small blunt leaves of the cedar elm.

The **flowers** appear in early spring, long before the leaves unfold. The **fruit** ripens in the spring about the time the leaves appear; it is winged, tipped with two small incurved awns or beaks, oblong, reddish brown, about one-third of an inch long, with a long slender stalk at the base, and covered with white hairs.

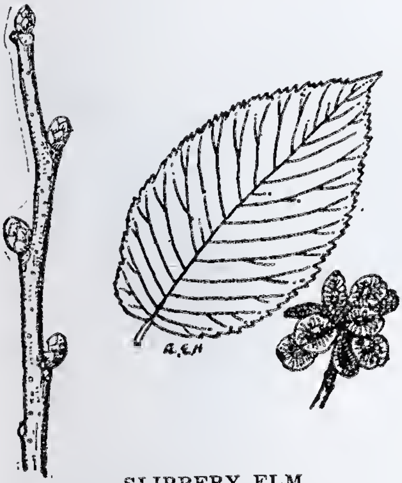
The **wood** is very similar to that of the other elms—heavy, hard, strong and difficult to split. It is occasionally used for hubs and mauls. Formerly, rope made of the inner bark was used for binding the covers to cotton bales.

SLIPPERY ELM (Red Elm)

(*Ulmus fulva* Michx.)

THE slippery elm, or red elm, is found in the eastern and southern parts of the state as far as the upper Guadalupe and Leon Rivers in Kerr and Comal counties. It is found principally on the banks of streams and on low hillsides in rich soil. It is a tree of small to moderate size, but noticeably wide-spreading. It is usually less than 40 feet in height and 6 inches in diameter, although trees of larger dimensions are occasionally found.

The **bark** on the trunk is frequently 1 inch thick, dark grayish brown, and broken by shallow fissures into flat ridges. The inner bark is used to some extent for medicinal purposes, as it is fragrant, and, when chewed, affords a slippery mucilaginous substance, whence the tree gets its name.



SLIPPERY ELM
Leaf and Fruit, one-third natural size
Twig, one-half natural size

The **leaves** are simple, alternate on the stem, 4 to 6 inches in length, sharp-pointed their bases unsymmetrical, doubly-toothed on the edges, thick, dark green, and rough on both sides.

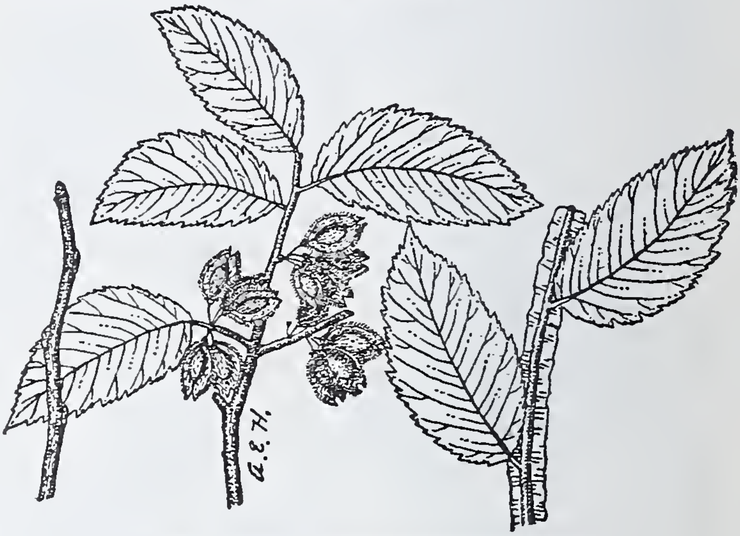
The **fruit** consists of a seed surrounded by a thin, broad, greenish wing, about one-half an inch in diameter; the **flowers** appear in early spring and the fruit ripens when the leaves are about half-grown.

The **wood** is close-grained, tough, strong, heavy, hard, and moderately durable in contact with the soil. It is used for fence-posts, crossties, agricultural implements, ribs for small boats and for some other purposes.

CEDAR ELM

(*Ulmus crassifolia* Nutt.)

THIS elm is found widely over the state, near streams in deep rich soil and on dry limestone hills. It is the most common elm-tree of Texas, extending to the Pecos River. It forms a tree up to 75 feet high with a tall straight trunk 2 to 3 feet in diameter, having an inversely conic round topped head and drooping branches. It reaches its largest size on the bottomlands of the Guadalupe and Trinity Rivers.



CEDAR ELM (three-fourths natural size)

The **bark** is light-brown tinged with red, deeply fissured, with flattened scaly-ridges. The young twigs are finely velvet and reddish, sometimes developing thin corky wings.

The **leaves** are small, the largest less than 2 inches long, often doubly toothed and usually rather blunt at the tip. Their upper surface is dark green, very rough, while the lower surface and leaf stem are hairy.

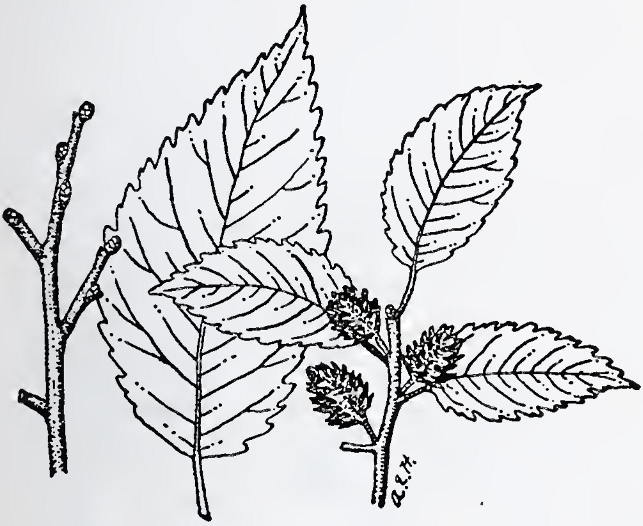
The **flowers** appear in the autumn, are in small short-stalked clusters in axils of the leaves. The **fruit** is an oval-shaped samara slightly more than a quarter of an inch long, hairy all over, especially on the edges, and deeply notched at the tip. The seeds are disseminated by the wind.

The **wood** is reddish brown, brittle, with a thick layer of lighter colored sapwood. It is sometimes used in the manufacture of hubs, furniture, and for fencing. Often planted as a shade tree.

PLANER TREE (Water Elm)

(*Planera aquatica* (Walter) Gmelin)

THE planer tree or water elm is found on low wet lands along the streams of the eastern part of the state as far west as Brazos and Matagorda Counties. It forms a small spreading tree with a low broad head 30 to 40 feet in height and with a maximum trunk diameter of 20 inches.



WATER ELM (nearly natural size)

The **bark** is light brown or gray, about one-quarter inch thick, and separates into large scales.

The **leaves** resemble those of the small-leaved elms. They are 2 to 3 inches long, three-quarters to 1 inch wide on short stalks, dark dull green above and paler on the lower surface with yellowish veins.

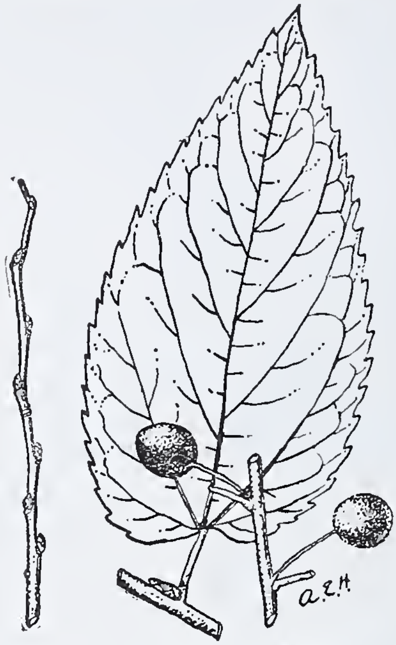
The **flowers** appear with the leaves in March or early April. The small flowers are sometimes normal, and sometimes the male and female flowers are borne separately on the same tree. The **fruit** is a peculiar rounded, shaggy appearing body, about three-eights of an inch long. It consists of a nut-like center covered with soft and very irregular wing-like outgrowths which extend out on all sides from the center.

The **wood** is light brown, coarse grained and soft, very light in weight, and has a broad zone of nearly white sapwood. It has little economic value.

ROUGH-LEAVED HACKBERRY

(*Celtis occidentalis crassifolia* (La Marck) Gray)

THE rough-leaved hackberry is found over eastern Texas on various types of soil. It is usually a medium sized to large tree, becoming 60 to 100 feet or more high and 10 to 20 inches in diameter. Its limbs are often crooked and angular and bear a head made of slender, pendant branches or short, bristly, stubby twigs. In the open, the crown is generally very symmetrical. It makes an excellent shade tree.



ROUGH-LEAVED HACKBERRY
Leaf, one-third natural size
Twig, one-half natural size

The **bark** is brownish gray, 1 inch or more thick, and generally very rough with many scale-like or warty projections of dead bark.

The **leaves** are simple, ovate, alternate, one-sided, 2 to 4 inches long, thick, very rough above, green on both surfaces, and the edges toothed toward the long point. The **flowers** are inconspicuous, and the two kinds are borne on the same tree. They appear in April or May, and are of a creamy greenish color. The **fruit** is a round, some-what oblong, drupe or berry, dark purple, one-third of an inch in diameter, ripening in September. It has a thin, purplish skin, and sweet yellowish flesh. The berries frequently hang on the tree most of the winter.

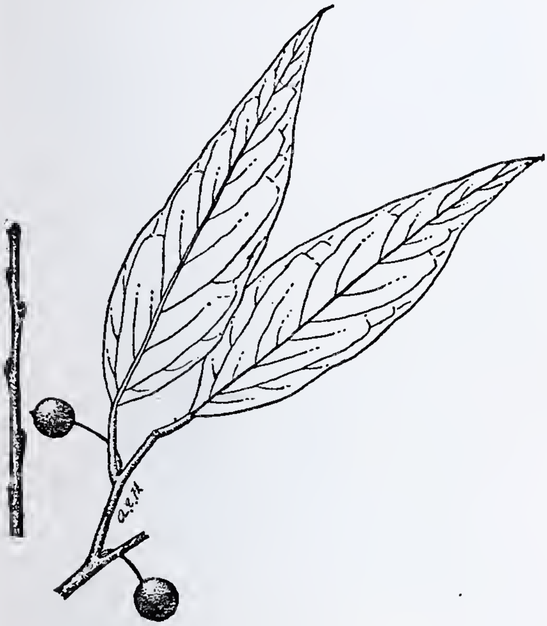
The **wood** is heavy, rather soft, weak, and decays readily when exposed. It is used chiefly for fuel, but occasionally for lumber.

The range of this hackberry extends far into the northern and northeastern parts of the United States.

SOUTHERN HACKBERRY (Sugarberry)

(*Celtis laevigata* Willd.)

THE southern hackberry or sugarberry is distributed widely over the eastern half of the state. It occurs most abundantly and attains greatest size in rich alluvial soil, but thrives on various types of soil from richest to poorest. Usually a small or medium sized tree from 30 to 50 feet high and 10 to 20 inches in diameter, though sometimes much larger. Its limbs are spreading or pendulus, forming a broad head, and its branchlets are slender, and light green, glabrous or pubescent when young and bright reddish brown during their first winter.



SOUTHERN HACKBERRY
Leaf and Fruit, one-half natural size.
Twig, two-thirds natural size.

The **bark** is pale gray and covered with prominent excrescences.

The **leaves** are simple, oblong-lanceolate, one-sided, 2 1-2 to 5 inches long, thin, with the edges smooth.

The **flowers**, not conspicuous, are borne on slender smooth stems, appearing in April or May, and are of a creamy-greenish color. The **fruit** is short-oblong to pear shaped, orange-red or yellow, one fourth inch in diameter, and ripens in September.

The **wood** is soft, weak, close-grained, and light yellow, and is used occasionally for flooring and furniture, but chiefly for fuel.

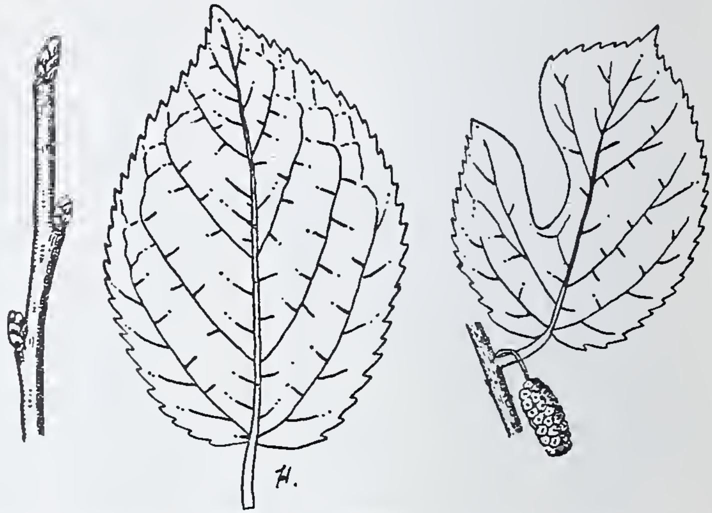
The tree is widely planted for shade in Texas. It is apparently not susceptible to cotton root rot, but is readily attacked by wood borers.

RED MULBERRY

(*Morus rubra* L.)

RED mulberry occurs in eastern Texas and west to the canyon of Devils River, Valverde County. It prefers rich moist soils. It is a small tree, rarely 50 feet high and 2 feet in diameter, often growing in the shade of larger trees.

The **bark** is rather thin, dark grayish brown, peeling off in long narrow flakes.



RED MULBERRY
Twig, two-thirds natural size Leaves, one-third natural size

The **leaves** are alternate, thin, rounded or somewhat heart-shaped, toothed, pointed, 3 to 5 inches long, rough hairy above and soft hairy beneath. Some of the leaves are mitten-shaped or lobed.

The **flowers** are of two kinds, on the same or different trees, in long drooping catkins, the female catkins shorter, appearing with the leaves. The **fruit** is dark red or black, and resembles a blackberry; however, a stalk extends through it centrally, and it is longer and narrower. The fruit is edible and greatly relished by birds and various animals.

The **wood** is rather light, soft, not strong, light orange-yellow, very durable in contact with the soil. It is chiefly used for fence-posts.

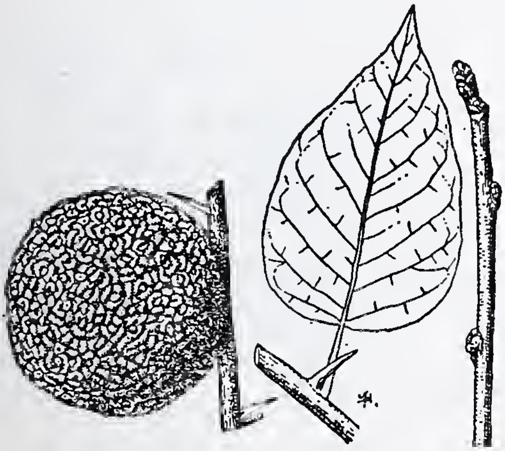
The Mexican mulberry, *Morus microphylla* Buckley, is found in west Texas and south, from the Colorado River.

The White mulberry, *Morus alba* L., is a native of China, naturalized in the United States.

BOIS D'ARC (Osage Orange)

(*Toxylon pomiferum* Rafn.)

THE osage orange, "bowdarc," hedge apple, or mock orange is native over east and central Texas; attaining its largest size in the valley of the Red River in the northeast part of the state. It commonly reaches a height of 20 to 40 feet and a diameter of 4 to 12 inches. The **bark** is thin, gray, sometimes tinged with yellow; on old trees divided into strips or flakes. It contains tannin and has been used for tanning leather. The **bark** of the roots supplies a yellow dye.



BOIS D'ARC
Leaf and Fruit, one-quarter natural size Twig, two-thirds natural size

The **leaves** are simple, alternate, oval-pointed and lustrous green on the upper surface, 3 to 5 inches long and 2 to 3 inches wide, and turn bright yellow in the autumn.

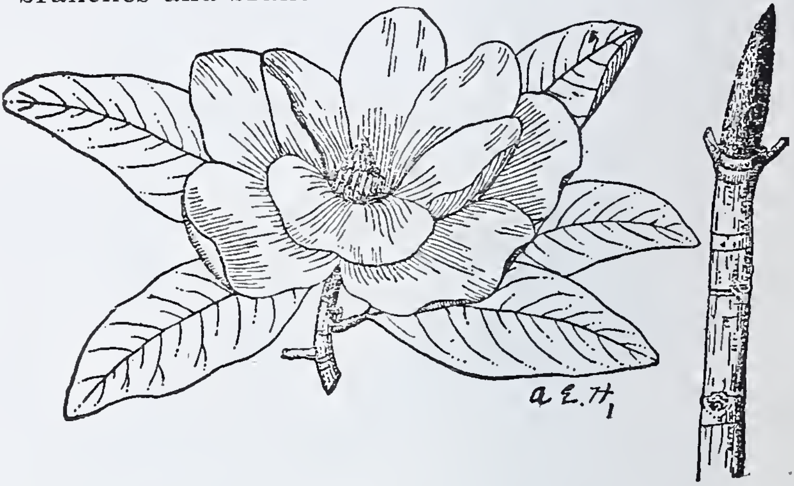
The yellowish **flowers** appear in May; two kinds on the same tree—the male flowers in a linear cluster and the female flowers a rounded ball. The **fruit** is globular, from 2 to 5 inches in diameter, resembling a very rough green orange.

The **wood** is heavy, exceeding hard, very strong, and very durable in contact with the soil. The heartwood is bright orange in color, turning brown upon exposure. It is largely used for posts. The Indians prized the wood for bows and war clubs.

MAGNOLIA (Evergreen Magnolia)

(*Magnolia grandiflora* L.)

THE magnolia is one of the best-known trees in the eastern part of the state. No other tree excells it in the combined beauty of leaves and flowers. Occurring naturally in rich moist soil on the borders of river swamps and near-by uplands in the Coastal Plain to the valley of the Brazos River, it has been widely cultivated for its ornamental value. In its natural habitat, it attains heights generally of 60 to 80 feet and trunk diameters up to 4 feet. The dense pyramidal head, or crown, is made up of numerous small spreading branches and branchlets.



MAGNOLIA

Leaf and Flower, one-fourth natural size Twig, one-half natural size

The **leaves** are evergreen, thick, leathery, elliptical or oval, dark green and shiny above, rusty or silvery beneath, and mostly from 5 to 8 inches long, and 2 to 3 inches wide, with prominent midribs. They remain on the tree for about 2 years.

The large **flowers** appear at intervals during the summer. They are very attractive with large pure white petals surrounding a splash of bright purple in the center and a pleasing fragrance.

The **fruit** is a rounded or oval head from 3 to 4 inches long containing many seeds, each enclosed in a sheath. These open in the fall and display the bright red "berries" dangling on slender threads.

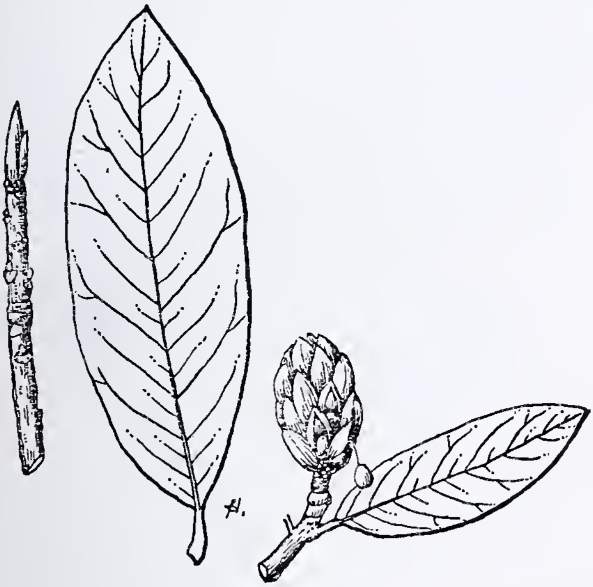
The **wood** is moderately heavy, hard, and of a creamy color. It is used for ornamental purposes, but chiefly for fuel.

SWEET BAY (Swamp Bay, White Bay)

(*Magnolia virginiana australis* Sarg.)

THE sweet bay or swamp bay is found in east Texas to the Nueces River in San Augustine County on low and wet ground. It grows to a height of 90 feet with a tall straight trunk, occasionally 3 feet in diameter.

The **leaves** are simple, oblong, pale green above and white beneath, 4 to 6 inches long, 1 to 4 inches wide, and remain on the tree without change of color until spring.



SWEET BAY

Leaf, one-third natural size

Twig, two-thirds natural size

The very fragrant **flowers**, with 9 to 12 creamy-white petals on slender smooth stems, measure from 2 to 3 inches across. They continue to open during several weeks in spring and early summer and perfume the air for quite a distance around with their pleasant fragrant odor. The **fruit** cluster, or "cone" is oval-shaped, dark red, smooth, about 2 inches long by one-half an inch broad, and contains scarlet seeds which are chiefly oval, flattened, and one-quarter inch long.

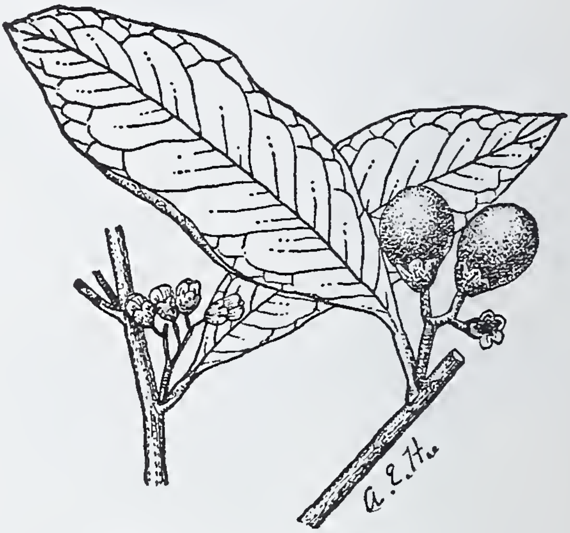
The **wood** is soft, light brown tinged with red, with creamy white sapwood. The large trees are often used for making broom handles and other articles of wooden-ware.

RED BAY

(*Persea borbonia* (L.) Sprengel)

THIS native of the Atlantic and Gulf Coast states from Virginia to the Brazos River in east Texas is a relative of the avocado, or alligator pear. In all about 100 species of Persea are found in North and South America.

The red bay is a tree up to 70 feet in height and 3 feet in diameter, with a well-shaped head of erect, stout, dark green branches. It grows in moist rich soils along the streams and in swamps, and sometimes in drier soils along with long leaf pine, over the coastal region.



RED BAY (two-thirds natural size)

The **leaves** are oblong, smooth on the margin, thick or leathery, up to 4 inches in length and 1½ inches in width, bright green with a narrow orange-colored midrib. They remain green over the first winter. The **flowers** are in small clusters and yellowish white.

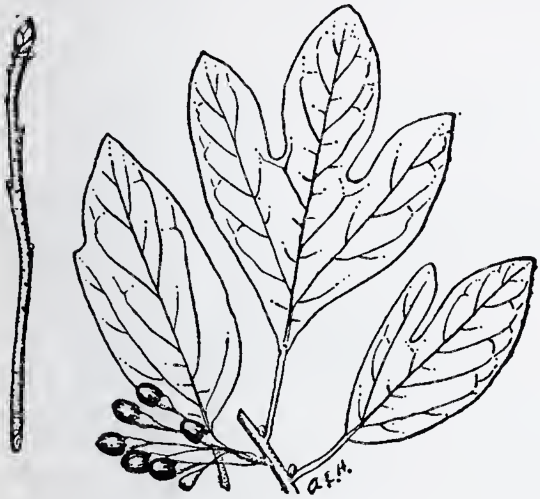
The **fruit** is a nearly round, rather fleshy berry, ripening in the autumn, and about ½ inch in length. It is dark blue or nearly black and shiny, and contains a large rounded seed.

The **wood** is heavy, hard, strong, bright red, with thin, lighter colored sapwood. It is used for cabinet-making, and interior house finish, and has been used for building boats.

SASSAFRAS

(*Sassafras variifolium* (Salisbury) Kuntze)

THIS small, aromatic tree is usually not over 40 feet in height or a foot in diameter. It is common in Texas west to the Brazos River on the drier soils, and is one of the first broad-leafed trees to come up on abandoned fields, where the seeds are dropped by birds. It is closely related to the camphor tree of Japan. The bark of the tree is red-brown and deeply furrowed and that of the twigs is bright green. The **leaves** are very characteristic. It is one of the few trees having leaves of widely different shape on the same tree, or even on the same twig. Some are oval and entire, 4 to 6 inches long; others have one lobe, resembling the thumb on a miten; while still others are divided at the outer end into 3 distinct lobes. The young leaves and twigs are quite mucilaginous.



SASSAFRAS
Twig, one-half natural size
Leaf, one-third natural size

The **flowers** are clustered, greenish, yellow, and open with the first unfolding of the leaves. The male and female flowers are usually on different trees. The **fruit** is an oblong, dark blue or black, lustrous berry, containing one seed and surrounded at the base by what appears to be a small orange-red or scarlet cup at the end of a scarlet stalk.

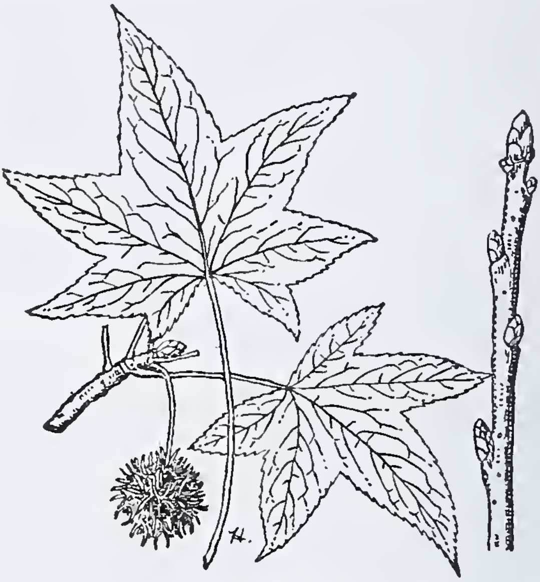
The **wood** is light, soft, weak, brittle, and durable in the soil; the heartwood is dull orange-brown. It is used for posts, rails, boat-building, cooperage and for ox-yokes. The bark of the roots yields the very aromatic oil of sassafras much used for flavoring candies and various commercial products.

SWEET GUM, or RED GUM

(*Liquidambar styraciflua* L.)

THE sweet gum is a large valuable forest tree in east Texas. It occurs on rich river bottoms and in swamps subject to frequent overflow, as well as on drier uplands, as far west as the Trinity River. The **bark** is a light gray, roughened by corky scales, later becoming deeply furrowed. After the second year the twigs often develop 2 to 4 corky projections of the bark, which gives them a winged appearance.

The simple alternate star-shaped **leaf** with its 5 to 7 points or lobes, is 5 to 7 inches across and very aromatic. In the fall its coloring ranges from pale yellow through orange and red to a deep bronze.



SWEET GUM
Leaf, one-third natural size
Twig, two-thirds natural size

The **flowers** are of two kinds on the same tree unfolding with the leaves. The **fruit** is a head and resembles the seed ball of the sycamore. It measures an inch or more in diameter and is made up of many capsules with projecting spines. It hangs on the tree late into the winter.

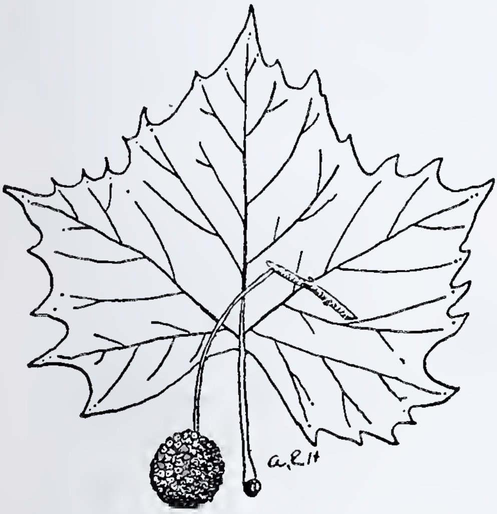
The **wood** is heavy, moderately hard, close-grained, and not durable on exposure. The reddish brown heartwood, which suggests the name red gum, is not present to any appreciable extent in logs under 16 inches in diameter. The wood is extensively used for flooring, interior finish, paper pulp and veneers for baskets of all kinds. Veneers of the heartwood are largely used in furniture, sometimes as imitation mahogany or circassian walnut. This tree should be more widely planted for ornamental use.

SYCAMORE

(*Platanus occidentalis* L.)

THE sycamore, also called buttonwood, is considered the largest hardwood tree in North America. It occurs throughout east Texas to Lavalla County. It is most abundant and reaches its largest size along streams and on rich bottomlands. It is one of the more rapid-growing trees. In maturity it occasionally attains a height of 140 to 170 feet and a diameter of 10 to 11 feet.

The bark of the sycamore is a characteristic feature. On the younger trunk and large limbs it is very smooth, greenish gray in color. The outer bark yearly flakes off in large patches and exposes the nearly white younger bark. Near the base of old trees the bark becomes thick, dark brown and divided by deep furrows.



SYCAMORE (one-third natural size)

The **leaves** are simple, alternate, 4 to 7 inches long and about as broad, light green and smooth above, and paler below. The base of the leafstalk is hollow and in falling off exposes the winter bud. The **fruit** is a ball about 1 inch in diameter, conspicuous throughout the winter as it hangs on its flexible stem, which is 3 to 5 inches long. During early spring the fruit ball breaks up, and the small seeds are widely scattered by the wind.

The **wood** is hard and moderately strong, but decays rapidly in the ground. It is used for butchers' blocks, tobacco boxes, furniture and interior finish.

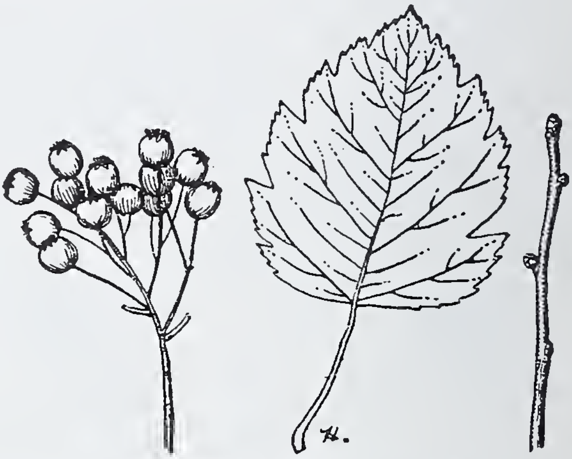
As a shade and ornamental tree it is planted in many parts of the state, being one of the most popular trees for dry uplands.

HAWTHORN, HAW

(White Haw, Red Haw, Thorn Bush)

(*Crataegus* species)

THE hawthorn, as here treated, represents about 30 different species and varieties distributed throughout the state. Members of the group occur on the poorest and richest soils, on the shallowest and deepest, and on the limestone hills as well as on the rich bottom and swamp land. Most of the forms have a common likeness in possessing thorns and bearing white blossoms and red or yellow fruit. Some species are planted as ornamental trees, but otherwise the group is of little commercial value.



HAWTHORN (two-thirds natural size)

The **bark** is generally thin, gray in color, and on the old stems broken up into thin, narrow scales.

The **leaves** are simple, alternate, mostly oval or wedge-shaped, notched on the edges, and usually from 2 to 3 inches long.

The **flowers** are white, some fragrant and others with a slightly unpleasant odor; they appear in early spring. The **Fruit** varies from globular to oblong, from one-fourth to three-fourths inch in diameter; some when ripe have a pulpy, sweet, edible flesh, surrounding from 1 to 5 bony seeds. The fruit of most species ripens in the fall, and one or two varieties yield a fruit highly prized for making jelly.

The **wood** is strong, tough, heavy, hard, but rarely used for any purpose.

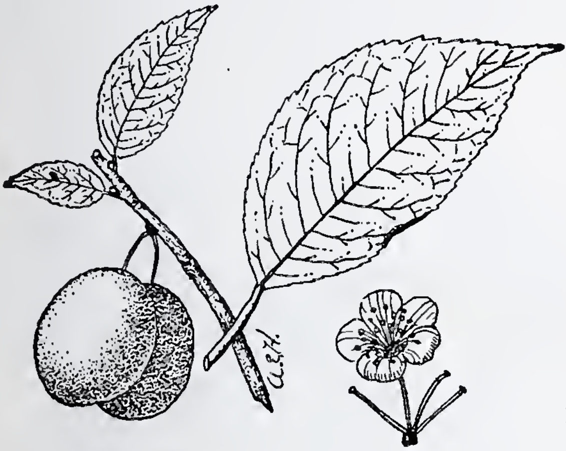
Many species of birds are attracted to these trees and bushes, largely on account of the fruit and the protection offered for nesting.

MEXICAN PLUM, WILD PLUM

(*Prunus mexicana* S. Watson)

ONE of the common wild plums is a small tree reaching 20 to 25 feet in height and 8 to 10 inches in diameter. Uncommonly it grows in thickets where it attains only large shrub size.

The **leaves** are alternate, oval, pointed, finely and doubly toothed along the margin, dark yellow-green, smooth and shiny, thick and firm, 2 to 3 inches long by 1 to 2 inches wide, narrowed or rounded at the base, and prominently veined on both surfaces.



MEXICAN PLUM (three-fourths natural size)

The white **flowers** appear in numerous small clusters in March before the leaves. With a profusion of flowers, this tree is one of the delights of early spring in the woods. The **fruit**, or plum, which ripens in late summer, is dark purple-red covered with a bluish "bloom," about an inch in diameter, contains a stone or pit that is pear-shaped and about as long as the pulpy part, and varies widely in its palatability.

The **bark** is dark, varying from gray to nearly black. Peeling by curling scales on young branches but on old trunks becoming rough and deeply furrowed.

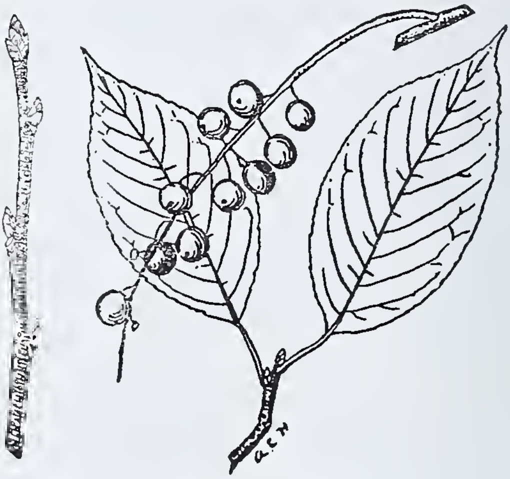
The laurel cherry *Prunus caroliniana* Ait. is the only evergreen member of the group occurring in Texas.

BLACK CHERRY

(*Prunus serotina* Ehr.)

A MEDIUM-SIZED tree, up to about 70 feet high and 1 to 3 feet in diameter, black cherry is found in eastern Texas and in the mountains of west Texas. The forest-grown trees have long clear trunks with little taper. Open-grown trees have short trunks with many branches and irregular spreading crowns. The **bark** on branches and young trunks is smooth and bright reddish brown, marked by conspicuous, narrow, white, horizontal lines, and has a bitter almond taste. On the older trunks the bark becomes rough and broken into thick, irregular plates.

The **leaves** are alternate, simple, oval to lance-like in shape, with edges broken by many fine incurved teeth, thick and shiny above, and paler beneath.



BLACK CHERRY
Leaf, one-third natural size
Twig, two-thirds natural size

The **fruit** is dull purplish black, about as large as a pea, and is borne in long hanging clusters. It ripens in late summer, and is edible, although it has a slightly bitter taste.

The **wood** is reddish brown with yellowish sapwood, moderately heavy, hard, strong, fine-grained, and does not warp or split in seasoning. With the exception of black walnut, cherry lumber has a greater unit value than any other hardwood of the eastern United States.

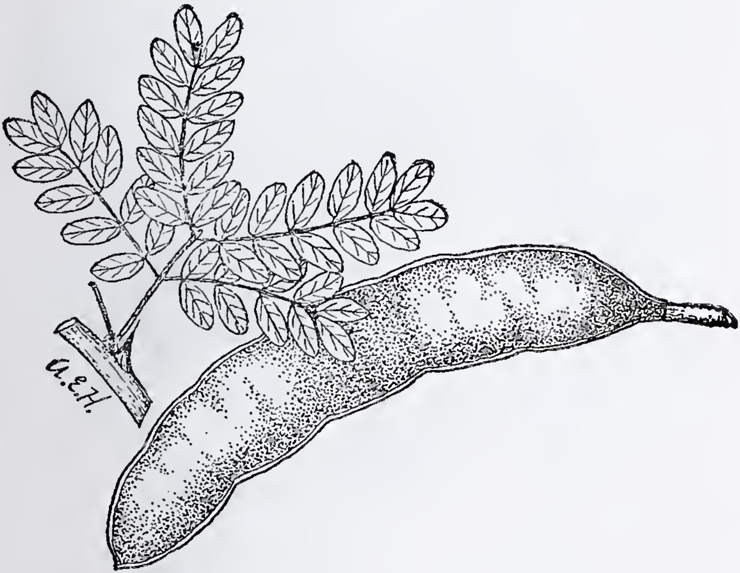
The southwestern black cherry *Prnnsu virues* Shreve.) is found in the Guadalupe Mountains of West Texas.

TEXAS EBONY

(*Pithecolobium flexicaule* (Bentham) Coulter)

THIS beautiful evergreen occurs as a small tree or scrub in South Texas from Matagorda Bay and south into Mexico. Its short spreading branches, forming a wide, round head, carry stout zigzag branchlets, dark reddish brown or light gray, armed with persistent stipular spines one-fourth to one-half inch long.

The **leaves**, about 2 inches long, are featherlike (twice pinnate) with sessile, leathery leaflets that are dark green and shiny on the upper surface, paler on the lower surface, and one-fourth to one-third inch long.



TEXAS EBONY (two-thirds natural size)

The **flowers** are light yellow or cream colored and very fragrant, appearing from June to August in dense cylinderical groups.

The **fruit** ripens in the fall and remains on the branches until after the flowering season the following year. It is a flattened, curved, hairy pod, 4 to 6 inches long, and about one inch wide.

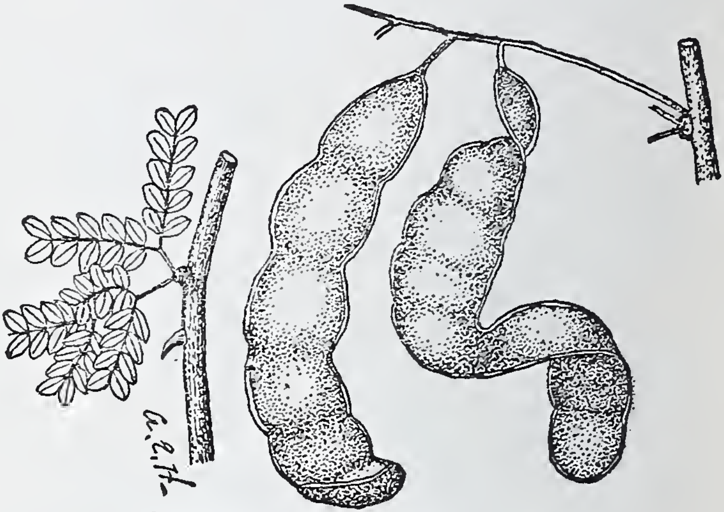
The **wood** is very heavy, hard, close-grained, dark rich red-brown tinged with purple. Almost indestructible when used for fence posts; valued for cabinet work.

The tree is considered the most valuable native in the lower Rio Grande Valley. The seeds are used by the Mexicans as a substitute for coffee.

CATSCLAW (Una de Gato)

(*Acacia greggii* A. Gray)

FOUND on dry gravelly mesas, the sides of low canyons and the banks of mountain streams in the Rio Grande valley, this small tree rarely reaches a height of 30 feet, and has a trunk up to 12 inches in diameter. The top or head consists of numerous spreading branches and smooth pale brown or red branchlets, armed with stout curved spines (cat's claw.)



CATSCLAW (three-fourths natural size)

The small compound **leaves** are composed of leaflets arranged feather-like. The latter are about one-quarter inch in length. The leaves are doubly compound.

The fragrant yellow **flowers** appear during the summer, in small clusters or "spikes."

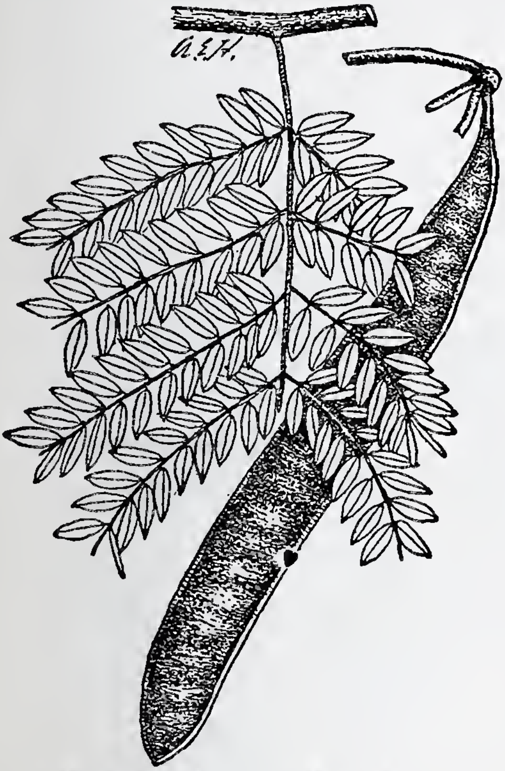
The **fruit** is a twisted or distorted pod, 2 to 4 inches long by about three-fourths inch wide. The pod is smaller between each of the 6 to 8 seeds, which are nearly round, flattened, dark brown and shiny.

The **wood** is heavy, very hard, strong, close-grained, durable and clear brown or red in color.

MIMOSA

(*Leucaena greggii* S. Watson)

IN western Texas, upper San Saba River to Devils River, occurs a beautiful small tree, the mimosa. It grows in along the banks of streams and in moist ravines, and reaches a size of 15 to 20 feet in height and 4 to 5 inches in diameter.



MIMOSA (two-thirds natural size

The **leaves** are finely and doubly compound; that is, made up of 10 to 14 feather-like branches, each containing from 30 to 60 very small leaflets arranged along opposite sides of the leaf stem, like pinnae of a feather. Each leaflet is elliptical, grayish green or bluish green, smooth and about one-third inch long.

The white **flowers** are clustered in dense round heads, about one inch in diameter, borne on long stems. Each tiny flower has a protruding hair-like part which gives the head a fuzzy appearance.

The pods, or **fruit**, are 6 to 8 inches long and about one-half inch wide, flat and with narrow wing-like edges.

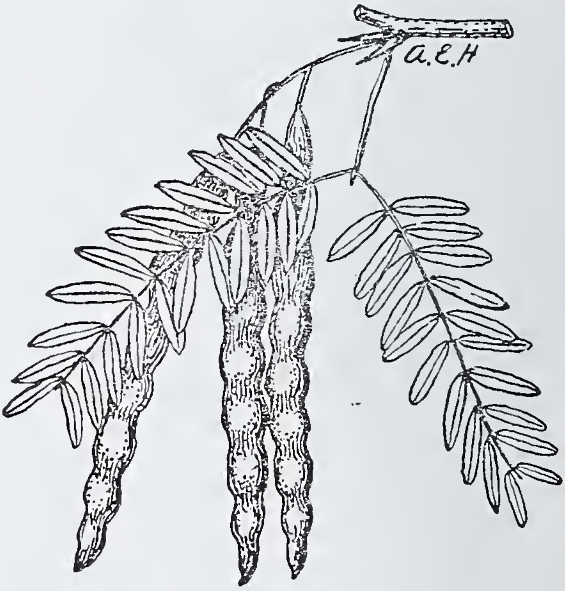
The **wood** is heavy, hard, close-grained, clear brown streaked with red, with thin, clear sapwood.

MESQUITE

(*Prosopis juliflora* (Swartz) D.C.)

THIS well-known small tree is found in the central and western parts of the state. The short trunk, usually only 6 to 8 inches in diameter, divides into many branches forming a loose, open top or crown. A variety called *glandulosa* (Torrey) Cook is found in east Texas.

The **root** system is very large, consisting of a thick taproot sometimes extending downward to a depth of 30 to 40 feet, with many radiating roots spreading horizontally in different directions.



MESQUITE (one-fourth natural size)

The leaves are compound, made up of 12 to 20 leaflets attached along a central midrib, or "stem," from 8 to 10 inches long. The leaflets are smooth, dark green, and pointed, often 2 inches long. Near their bases are small spines.

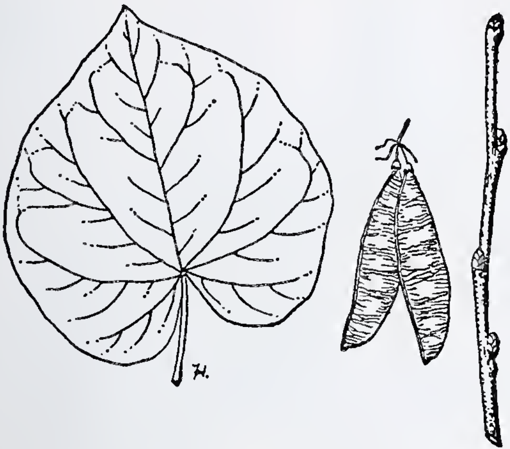
The fragrant **flowers** are tiny and in clusters (spikes) from 2 to 4 inches long. The **fruit** is a pod about 4 to 9 inches, narrowed between each of the 10 to 20 seeds, enclosed in a thick sweet pulp, used by the natives as food and eagerly sought by wild life and livestock.

The **wood** is heavy, hard, and dark reddish brown in color. It is much used for fuel and, because it is very lasting in the ground, for fence posts.

REDBUD

(*Cercis canadensis* L.)

THE redbud, sometimes called Judas-tree from its oriental relative of that name, is a small tree scattered through the woods of east Texas to the Brazos River. It attains a height of 25 to 50 feet and a diameter of 6 to 12 inches. Its stout branches usually form a wide flat head.



REDBUD

Leaf, one-fifth natural size Twig, two-thirds natural size

Fruit, one-third natural size

The **bark** is bright red-brown, the long narrow plates separating into thin scales.

The **leaves** are alternate, heart-shaped, entire, 3 to 5 inches long and wide, glossy green turning in autumn to a bright clear yellow.

The conspicuous, bright purplish red, pea-shaped **flowers** are in clusters along the twigs and small branches and appear before or with the leaves in early spring.

The **fruit** is an oblong, flattened, many-seeded pod, 2 to 4 inches long, reddish during the summer and often hanging on the tree most of the winter.

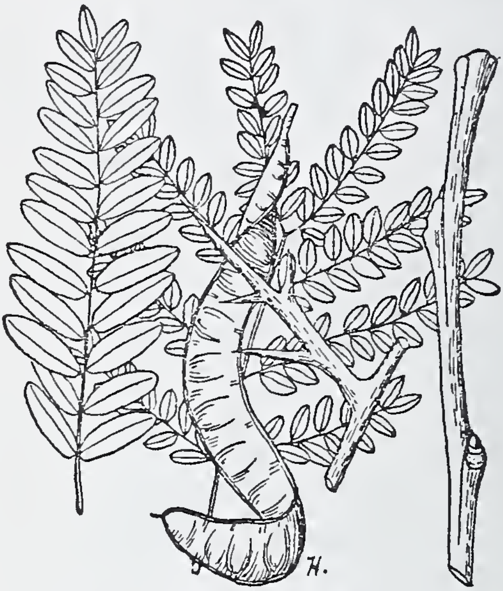
The **wood** is heavy, hard, not strong, rich dark brown in color, and of little commercial importance. The redbud is cultivated as an ornamental tree and for that purpose might be planted more generally in this state.

The Texas redbud (*Cercis reniformis* Englm.) is native near Dallas and south into Mexico. The leaf points are blunt and the flower clusters are more dense.

HONEY LOCUST

(*Gleditsia triacanthos* L.)

THE honey locust occurs naturally in the eastern part of the state to the Brazos River. It grows under a wide variety of soil and moisture conditions and is a popular tree for planting in the drier portions of Texas. It reaches a diameter of 30 inches and a height of 75 feet. The **bark** on old trees is dark gray and is divided into thin tight scales. The strong thorns—straight, brown, branched, sharp and shiny which grow on the 1-year-old wood and remain for many years—are sufficient to identify the honey locust.



HONEY LOCUST
Twig, three-quarters natural size
Leaf, one-quarter natural size

The **leaf** is pinnate or feather - like, with 18 to 28 leaflets; or it is twice-pinnate, consisting of 4 to 7 pairs of pinnate or secondary leaflets, each 6 to 8 inches long and somewhat resembling the leaf of the black locust.

The **fruit** is a pod, 10 to 18 inches long, often twisted, 1 to 1½ inches wide, flat, dark brown or black when ripe and containing yellow sweetish pulp and seeds. The seeds are very hard, each separated from the others by pulp. The pods are eaten by many animals, and as the seeds are hard to digest, many are widely scattered from the parent tree.

The **wood** is coarse-grained, hard, strong and moderately durable in contact with the ground.

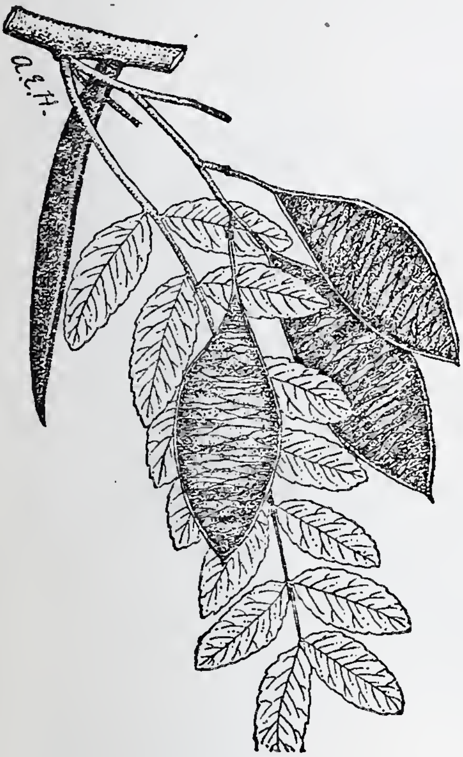
Honey locust is a good tree to substitute for the black locust which has been almost exterminated in this state by the locust borer.

WATER LOCUST

(*Gleditsia aquatica* Marshall)

IN river bottoms and swamps along the Gulf Coast as far west as the Brazos River and northward to Arkansas is found the water locust, a close relative of the well-known black locust. It can be distinguished by the small pod having one seed, rarely 2 or 3.

The water locust reaches heights of 50 to 60 feet and diameters up to 2 to 3 feet. The trunk is usually short, dividing into several spreading, and often distorted, branches. The branchlets have sharp spines from 3 to 5 inches in length, dark red and shiny.



WATER LOCUST (one-half natural size)

The **leaves** are 5 to 8 inches long, with 12 to 20 leaflets arranged in rows on opposite sides of the leaf stem, or midrib. Each leaflet is an inch or so in length, oblong, sometimes slightly toothed on the edge, dull green or yellow-green above and dark green on the lower surface.

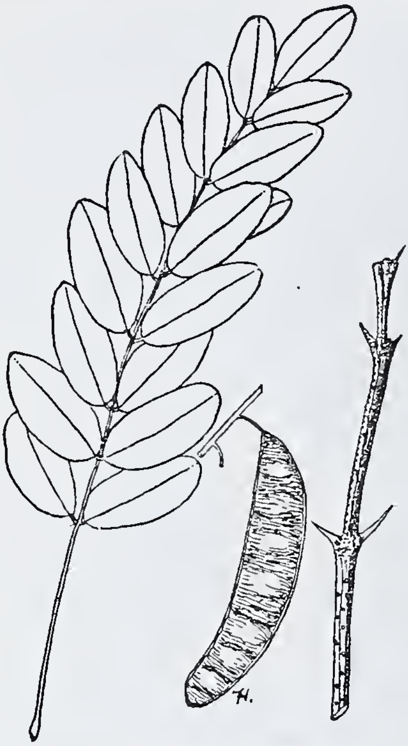
The **flowers** appear in small clusters along the flower stems (racemes) each about 3 to 4 inches long. They are green in color, and the stalks spring from the same place as the leaf stalks. They open after the leaves are well out. The **fruit** pod hangs by a slender stem, a few in a cluster. It is an inch wide and a little longer; the pod is thin-walled, tough and papery, chestnut brown, and shiny, and the seeds flattened, nearly round, about ½-inch across, and orange-brown in color.

The **wood** is heavy, very hard, strong, light reddish brown, and surrounded by a wide band of clear yellow sapwood.

BLACK LOCUST (Yellow Locust)

(*Robinia pseudoacacia* L.)

THE black locust is not native to Texas, so far as known, but has been widely planted here and has escaped from cultivation to a limited extent. It grows well in all soils and conditions of moisture except in swamps. In the past it was the most common and most successful tree planted in the high plains country. Of late years it has been almost completely wiped out by the locust borer and is no longer recommended for planting.



BLACK LOCUST
Leaf and Fruit, one-third natural size
Twig, two-thirds natural size

The twigs and branchlets are armed with paired straight or slightly curved sharp, strong spines, sometimes as much as 1 inch in length which remain attached to the outer bark for many years.

The **leaves** are pinnate, or feather-like, from 6 to 10 inches in length, consisting of from 7 to 19 oblong thin leaflets.

The **flowers** are fragrant, white or cream-colored, and appear in graceful pendant racemes.

The **fruit** is a pod from 3 to 5 inches long containing 4 to 8 small hard seeds which ripen late in the fall. The pod splits open during the winter, discharging most of the seeds. Some seeds usually remain attached to each half of the pod.

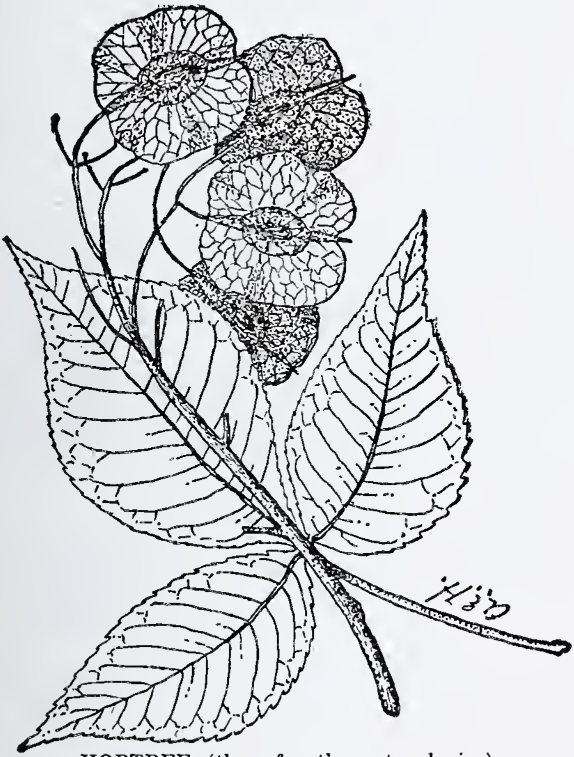
The **wood** is yellow, coarse-grained, very heavy, very hard, strong and very durable in contact with the soil. It is used extensively for fence-posts, poles, tree nails, insulator pins and occasionally for lumber and fuel.

HOPTREE (Wafer Ash)

(*Ptelea trifoliata* L.)

THIS small tree or large shrub, depending upon where the plant grows, is found scattered over the eastern portion of the state. The bark and leaves are bitter and strong-scented and possess tonic qualities.

The hoptree has a straight, slender trunk 6 to 8 inches in diameter and seldom reaches a height of more than 20 feet.



HOPTREE (three-fourths natural size)

The **leaves** are composed of 3 leaflets, sometimes 5, each of which is oval, or pear-shaped, and pointed, about 4 to 6 inches in length by 2 to 3 inches wide, and dark green on the upper surface The central leaflet is the largest.

The **fruit** consists of a small, round, 2-seeded winged "key" or "samara," resembling some the familiar paper caps for toy pistols. They occur in dense drooping clusters and hang on the tree over winter.

The **wood** is heavy, hard, yellowish brown, and close-grained. The bitter bark of the roots is sometimes used as a tonic.

HOLLY

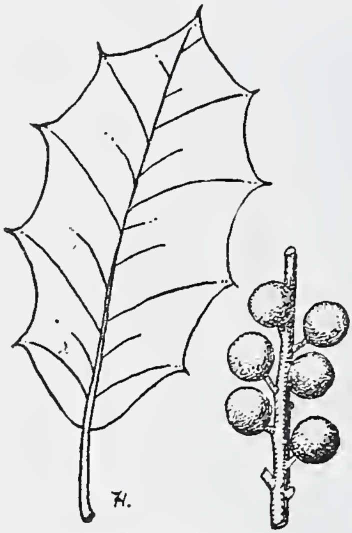
(*Ilex opaca* Ait.)

HOLLY occurs on rich damp soils in the river bottoms of east Texas to Sutherland Springs, Wilson County.

It is a small evergreen tree, seldom exceeding 30 feet in height and 12 inches in diameter. The **bark** is light gray and roughened by wart-like growths. The numerous short, slender branches form a dense, narrow pyramidal head of striking dark green color effect, especially when well laden with the conspicuous red berries.

The **leaves** are simple, alternate, oval, thick and leathery, 2 to 4 inches long, and armed with spiny teeth; they persist on the branches for about three years, then they drop off in the spring.

The **flowers** are small, whitish and inconspicuous; the male and female flowers are usually borne on separate trees.



HOLLY
(two-thirds natural size)

The **fruit**, which ripens late in the fall and persists on the branches over the winter, is a dull red or sometimes yellow, nearly round berry, about one-quarter of an inch in diameter containing 4 to 6 ribbed nutlets.

The **wood** is light, tough, not strong, and nearly white. It is valued and much used for cabinet work and wood-turning. For this purpose many of the larger, finer trees have been cut and marketed.

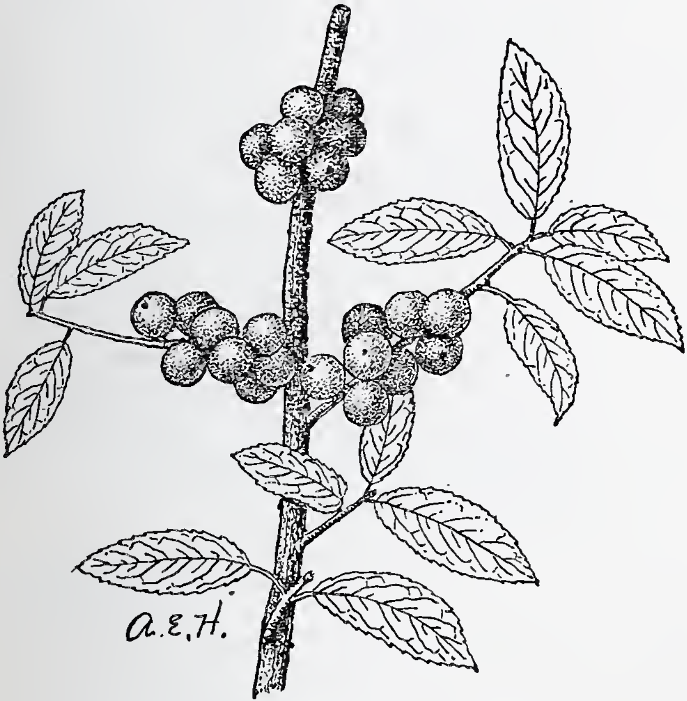
Holly is widely used as a Christmas decoration.

YAUPON

(*Ilex vomitoria* Ait.)

THIS close relative of the holly is found as a tree only in Texas where it reaches Matagorda Bay, Rio Blanco and the Guadalupe River and north to southern Arkansas. On the rich bottomlands of eastern Texas it is a small tree, 20 to 25 feet high with a trunk rarely over 6 inches diameter. Elsewhere a shrub.

The **leaves** are 1 to 2 inches long, ¼ to 1 inch wide, thick, glossy green above, paler below, persistent for 2 or 3 years.



YAUPON (two-thirds natural size)

The **flowers,** male and female, are borne on separate plants. The **fruit,** a scarlet berry, is produced in great abundance by the female plant and is much prized for Christmas decoration.

The **wood** is of little value except for fuel.

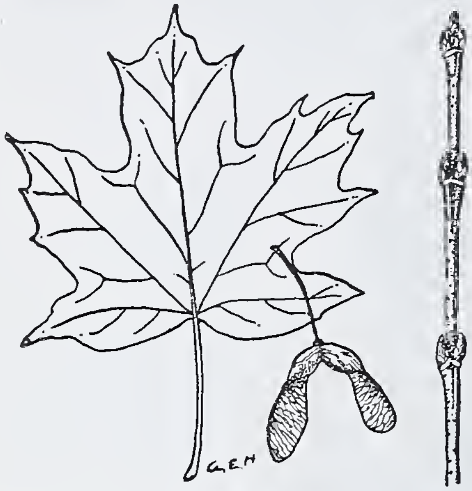
Yaupon is used in the South as a hedge plant. A tea made from the leaves was once popular with the Indians. The plant is now grown in cultivation on the Atlantic coast for the commercial production of yaupon tea.

Ilex decidua Walter, known as winterberry, is similar to yaupon, but the leaves shed in the fall and the berries, which remain over winter, are orange to orange-scarlet in color.

SUGAR MAPLE

(*Acer saccharum* Marsh.)

THE sugar maple has been used as a source of sugar ever since the days of the Indians. Sugar "orchards" or "bushes" have always been characteristic of the farms of many of the northern states. In Texas the tree is found in the eastern portion, where it reaches its extreme southwestern limit.



SUGAR MAPLE
Twig and Fruit, one-half natural size
Leaf, one-third natural size

The **bark** on young trees is light gray to brown and rather smooth, but as the tree grows older it breaks up into long, irregular plates or scales, which vary from light gray to almost black. The twigs are smooth and reddish brown, and the winter buds sharp-pointed. The tree attains a height of more than 100 feet and a diameter of 3 feet or more.

The **leaves** are 3 to 5 inches across, simple, opposite, with 3 to 5 pointed and sparsely toothed lobes, the divisions between the lobes being rounded. The leaves are dark green on the upper surface, lighter green beneath, turning in autumn to brilliant shades of dark red, scarlet, orange and clear yellow.

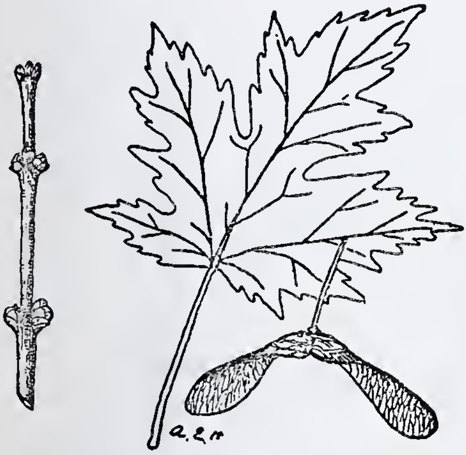
The **flowers** are yellowish green, on long thread-like stalks, appearing with the leaves, the two kinds in separate clusters. The **fruit**, which ripens in the fall, consists of a two-winged "samara" or "key," the two wings nearly parallel, about 1 inch in length and containing a seed. It is easily carried by the wind.

The **wood** is hard, heavy, strong, close-grained and light brown in color. It is known commercially as hard maple, and is used in the manufacture of flooring, furniture, shoe-lasts and a great variety of novelties. The sap yields maple sugar and maple syrup.

SILVER MAPLE

(*Acer saccharinum* L.)

THE silver or soft maple occurs rarely except in moist land and along streams in the extreme eastern part of the state. In its best region of growth, the valley of the lower Ohio River, it attains heights of 100 feet or more and diameters of 3 feet or over. It usually has a short trunk which divides into a number of large ascending limbs. These again subdivide, and the small branches droop but turn upward at the tips. The **bark** on the old stems is dark gray and broken into long flakes or scales. The silver maple grows rapidly and has been planted in Texas as a shade tree, but is less desirable than many other trees because of its brittleness and susceptibility to insects and fungus diseases.



SILVER MAPLE
Twig and Fruit, one-half natural size
Leaf, one-third natural size

The **leaves** are opposite on the stem, have from 3 to 5 lobes ending in long points with toothed edges and are separated by deep angular sinuses or openings; they are pale green on the upper surface and silvery white underneath. The **buds** are rounded, red or reddish brown, blunt-pointed; generally like those of red maple.

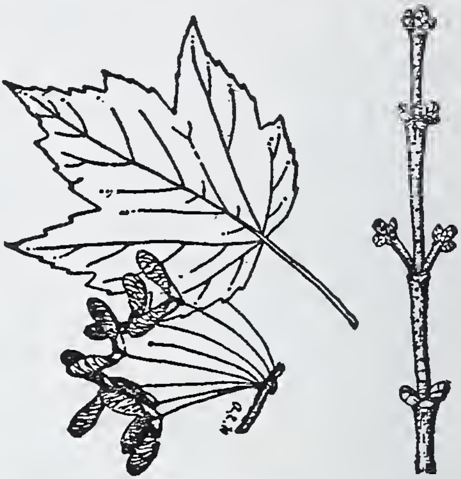
The **flowers** appear in the spring before the leaves, in dense clusters, and are of a greenish yellow color. The **fruit** ripens in late spring. It consists of a pair of winged seeds or "keys" with wings 1 to 2 inches long on slender, flexible, thread-like stems about an inch long.

The **wood** is soft, weak, even-textured, rather brittle, easily worked, and decays readily when exposed. It is occasionally used for flooring, furniture and fuel.

RED MAPLE

(*Acer rubrum* L.)

THE red maple, is found abundantly in the eastern part of the state. It is usually a medium-sized tree, quick-growing and relatively short-lived. It is used as a shade tree, though of inferior quality for this purpose. The bark is smooth and light gray on young stems, and dark gray and rough on the old limbs and trunks.



RED MAPLE
Leaf and Fruit, one-third natural size   Twig, one-half natural size

The leaves are 2 to 5 inches long and have from 3 to 5 pointed, saw-toothed lobes, which are separated by sharp angular sinuses or openings. The upper surface when mature is light green and the lower surface whitish and partly covered with pale down. In autumn the leaves turn to brilliant shades of red, orange and yellow.

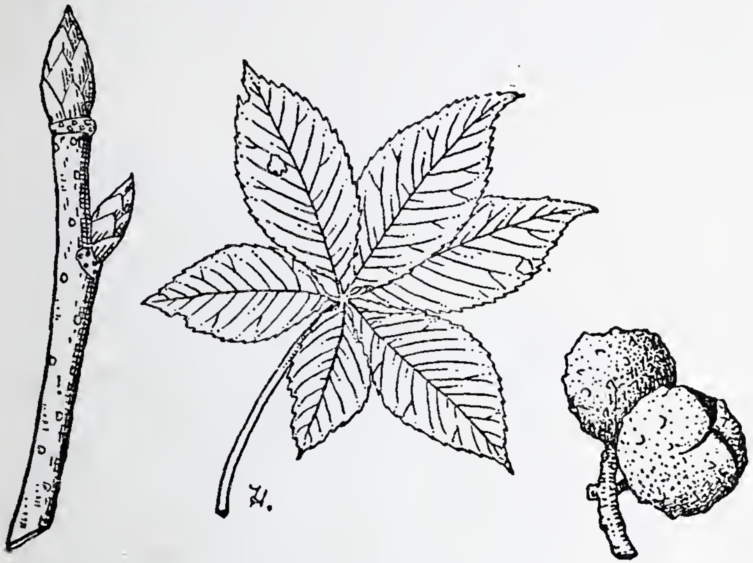
The red **flowers** in dense clusters appear in early spring before the leaves, the buds turning a deep red sometimes before they open. The winter buds are small, red and round or blunt-pointed. The **fruit** ripens in the late spring or early summer. It consists of pairs of winged seeds, or keys, one-half to 1 inch in length, on long drooping stems, red, reddish brown or yellow in color.

The **wood,** which is commercially known as soft maple, is heavy, close-grained, rather weak and of a light brown color. It is used in the manufacture of furniture, and for turnery, woodenware, and also for fuel.

OHIO BUCKEYE

(*Aesculus glabra leucodermis* Sarg.)

THE Ohio buckeye occurs over eastern Texas scattered along streams and in rich soils. Though often only a shrub, it becomes a medium-sized tree in rich alluvial bottoms. Its leaves and fruit are poisonous to stock.



OHIO BUCKEYE
Twig, two-thirds natural size Nut, one-third natural size
Leaf, one-quarter natural size

The **bark** is white and, on old trees, divided or broken into light-brown flat scales, which make the stem of the tree rough; the bark is ill-smelling when bruised.

The **leaves** are compound, or star-shaped, usually of 7 leaflets, opposite on the stem, fited or ill-smelling. They are smooth and pale on the lower surface, usually turn yellow in the summer and then fall off.

The **flowers** are cream-colored and appear in clusters, 5 to 8 inches long, in April or May.

The **fruit** is generally rounded, pale brown, generally thin-walled, roughened with blunt prickles or warts, and breaking into 2 to 3 valves, discloses the bright shiny seeds, or nuts.

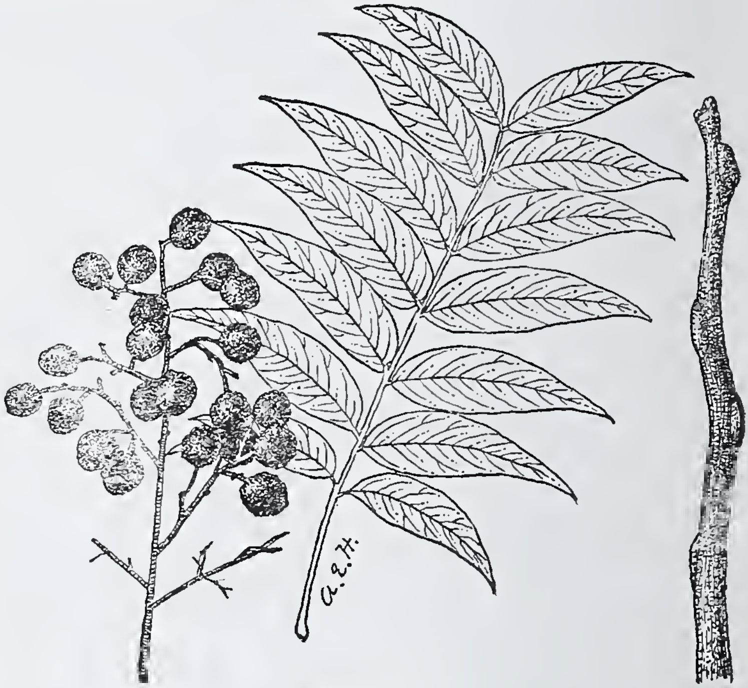
The **wood** is light, soft and weak, and decays rapidly when exposed. It is used for woodenware, artificial limbs, paper pulp, and for lumber and fuel.

Aesculus discolor Pursh., the wooly buckeye, is usually found as a shrub in Comal and Wilson Counties. The variety *mollis* Sarg., scarlet buckeye is common through eastern Texas to Bexar and Kendall Counties, as a shrub 9 to 12 inches high.

WILD CHINA (Soapberry)

(*Sapindus drummondii* Hook. & Arn.)

THIS species, sometimes called Indian soap plant, grows on moist clay soils or dry limestone uplands. It ranges through eastern Texas to New Mexico and the Rio Grande, becoming a tree 40 to 50 feet high and 1 to 2 feet in diameter, with usually erect branches, and branchlets at first slightly many-angled.



WILD CHINA

Leaf, two-fifths natural size — Fruit, one-third natural size

The **bark** is broken by deep fissures into long narrow plates which in turn are broken on the surface into small red-brown scales.

The **leaves**, appearing in March or April, bear 4 to 9 pairs of alternate lance-shaped leaflets which are pale yellow-green, about 2½ inches long and ½ to 2/3 inch wide. The leaves fall in autumn or early winter.

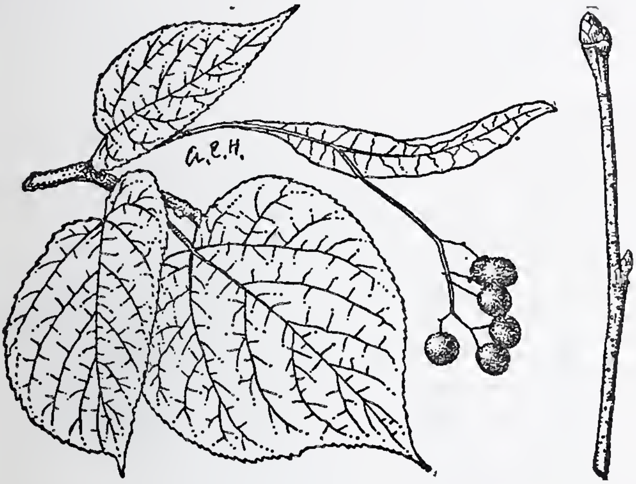
The **flowers** are whitish, in large, dense clusters. The **fruit**, ripening in September and October, does not fall until spring; yellow with dark brown seeds.

The **wood** is heavy, strong, close-grained, light brown tinged with yellow. It splits easily into thin strips and is used for cotton baskets, and the frames of pack saddles.

BASSWOOD, or LINDEN

(*Tilia* species)

THE basswoods, lindens, or lins, are a distinctive group of forest trees, so similar to each other that they are here being considered together. In Texas the five species and four varieties are found from the Arkansas line to the Brazos River and westward to Uvalde, Kerr and Bandera counties, usually on rich, moist soils. They are rarely over 50 feet tall and 12 inches in diameter. The **bark** is light brown and deeply furrowed. The inner bark furnishes bast for making mats.



BASSWOOD

Leaf, one-third natural size Twig, one-half natural size

The **leaves** are more or less heart-shaped, 3 to 6 inches long, thin, saw-toothed, smooth on both sides in some species, but woolly on the under surface of others.

The very fragrant **flowers** are yellowish white, in drooping clusters opening in early summer, and the flower-stem is united to the middle of a long, narrow, leaf-like bract.

The **fruit** is a berry-like, dry, 1 to 2 seeded and rounded pod, one-quarter to one-half an inch in diameter, covered with short, thick and brownish wool. It remains attached in clusters to the leafy bract, which later acts as a wing to bear it away on the wind.

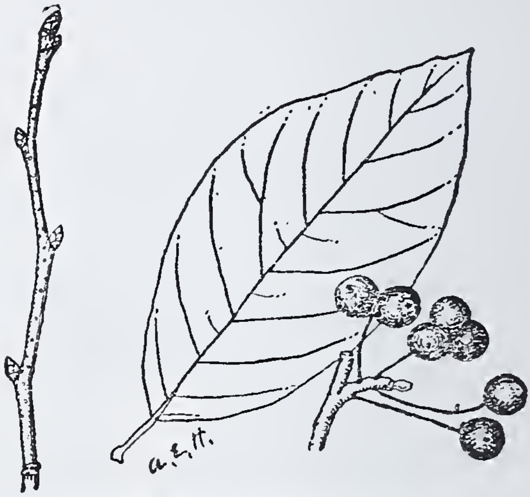
The **wood** is light, soft, tough, not durable, light brown in color. It is used in states where the growth is better in the manufacture of pulp, woodenware, furniture, trunks, excelsior and many other articles. The principal use of basswoods in Texas is for shade and ornament.

BLACK GUM

(*Nyssa sylvatica* Marsh.)

THE black gum, often called sour gum, is found in east Texas to the valley of the Brazos river; usually in swampy wet soil, but sometimes on dry slopes with the oaks.

The **leaves** are simple, 2 to 3 inches long, entire, often broader near the apex, shiny, and dark green in color. In the fall the leaves turn a most brilliant red.



BLACK GUM (one-half natural size)

The **bark** on younger trees is furrowed between flat ridges, and gradually develops into quadrangular blocks that are dense, hard and nearly black.

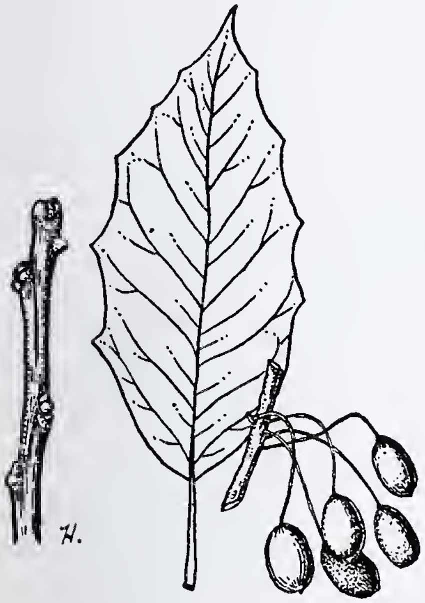
The greenish **flowers** on long slender stems appear in early spring when the leaves are about one-third grown. They are usually of two kinds, the male in many-flowered heads and the female in two to several-flowered clusters on different trees. The **fruit** is a dark blue, fleshy berry, two-thirds of an inch long, containing a single hard-shelled seed, and is borne on long stems, 2 to 3 in a cluster.

The **wood** is very tough, cross-grained, not durable in contact with the soil, hard to work, and warps easily. Once considered a weed tree, the species is now valuable for basket veneer, box boards and paper pulp. In the old days, the hollow trunks were used for "bee-gums."

TUPELO GUM (Cotton Gum)

(*Nyssa aquatica* L.)

TUPELO GUM is found only in deep river swamps or coastal swamps which are often inundated. The commonly enlarged base, large-sized fruit, hanging on a long stem and the brittleness of the twigs, serves to distinguish it from the black gum. It forms a tall, often slowly tapering somewhat crooked trunk 50 to 75 feet in height and 2 to 3 feet in diameter. The spreading small branches form a narrow, oblong or pyramidal head. The branches are generally smooth and light brown in color. The **bark** of the trunk is thin, dark brown and furrowed up and down the trunk.



TUPELO GUM
Leaf and Fruit, one-third natural size
Twig, two-thirds natural size

The **leaves** are simple, ovate or oblong in shape, acute and often long-pointed. When mature, they are thick, dark green and lustrous on the upper side, pale and somewhat downy on the lower side, 5 to 7 inches long and 2 to 4 inches in width, wedge-shaped at the base, irregular and slightly notched or toothed on the margin. The leaf-stem is stout, 1 to 2 inches long, grooved and enlarged at the base.

The **flowers**, which appear in March or April, are of two kinds, usually borne on separate trees, the male in dense round clusters, and the female solitary on long slender stems.

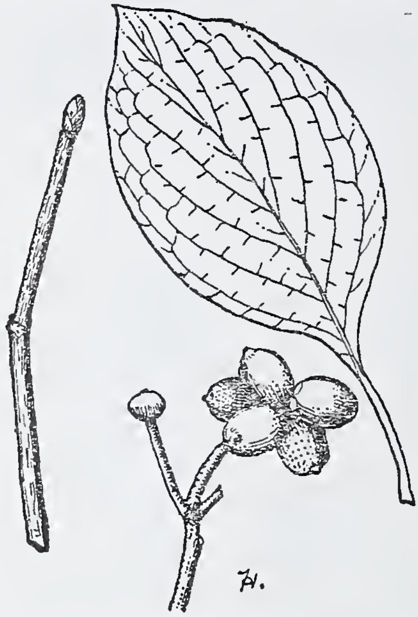
The **fruit**, ripening in early fall, is a so-called "plum," oblong or obovate in shape, about an inch long, dark purple, and has a thick, tough skin enclosing a flattened stone, borne on a slender stalk 3 to 4 inches long.

The **wood** is light, soft, and not strong. It is used for woodenware, broom handles, fruit and vegetable packages and is marketed as tupelo or bay poplar lumber.

DOGWOOD

(*Cornus florida* L.)

DOGWOOD, or flowering dogwood, grows in the forests of eastern Texas, usually under the larger forest trees. It is a small tree, up to 30 feet high and 12 inches in diameter, occasionally larger, with a rather flat and spreading crown and short, often crooked trunk.



DOGWOOD
Leaf and Fruit, one-half natural size
Twig, two-thirds natural size

The **bark** is reddish brown to black and broken up into small 4-sided scaly blocks.

The **leaves** are opposite, ovate, 3 to 5 inches long, 2 to 3 inches wide, pointed, entire or wavy on the margin, bright green above, pale green or grayish beneath.

The **flowers**, which unfold from the conspicuous, round, grayish, winter flower buds before the leaves come out, are small, greenish yellow, arranged in dense heads surrounded by large white or pinkish petal-like bracts, which appear like large spreading flowers 2 to 4 inches across.

The **fruit** is a bright scarlet "berry," one-half an inch long and containing a hard nutlet in which are 1 or 2 seeds. Usually several fruits, or "berries," are contained in one head. They are relished by birds, squirrels and other animals.

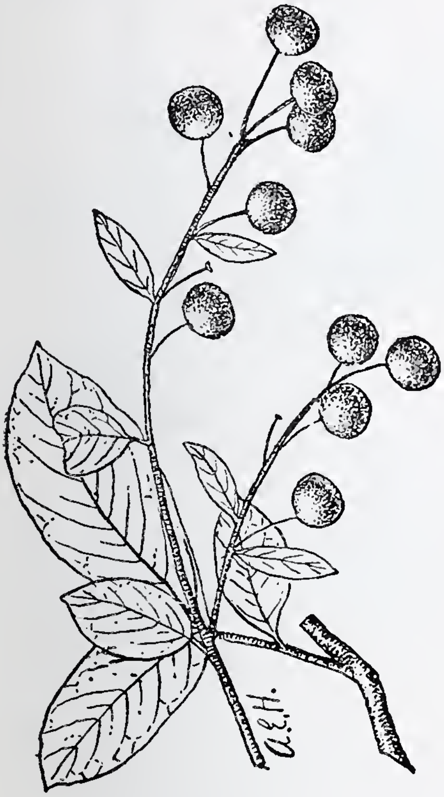
The **wood** is hard, heavy, strong, very close-grained, brown to red in color. It is in great demand for cottonmill machinery, turnery handles and forms. Persimmon has quite similar wood.

With its masses of early spring flowers, its dark-red autumn foliage and bright-red berries, dogwood is probably our most ornamental native tree. It should be used more extensively in eastern Texas for ornamental planting.

TREE HUCKLEBERRY (Sparkleberry)

(*Vaccinium arboreum* Marsh.)

IN the coastal belt of eastern Texas as far as Matagorda Bay this huckleberry tree grows in moist, sandy soil along the banks of ponds and streams. Although it is found from Virginia to Missouri and southward it reaches its largest size near the Gulf Coast of Texas. The tree reaches a height of 20 to 30 feet. The crooked trunk may attain a diameter of 8 to 10 inches. Further inland it is a large shrub.



TREE HUCKLEBERRY
(nearly natural size)

The **leaves** are oval and glossy green, varying up to 2 inches in length and 1 inch in width. They are mostly evergreen or at least persist on the twigs during the winter.

The **flowers** are small, white, bell-shaped and appear in long open clusters or racemes.

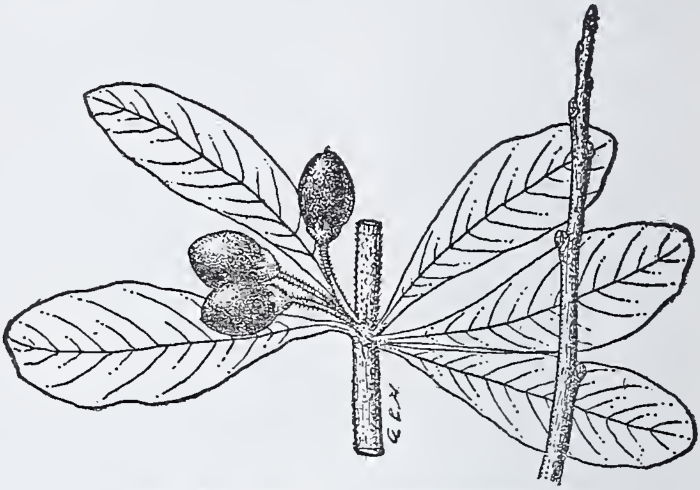
The small, round, shiny, nearly black berries, or **fruit,** ripen in the fall and unless eaten by birds or animals remain until spring. They have a slightly puckering but pleasing flavor.

The **wood** is heavy, hard, close-grained, and light reddish brown. It is sometimes used for tool handles.

GUM ELASTIC (Chittam Wood)

(*Bumelia lanuginosa* Pers.)

GUM elastic occurs along streams and in sandy woods in east Texas south to the San Antonio River and over the Edwards Plateau to Palo Pinto County. It reaches its largest development probably in the central coastal region of Texas where it occasionally makes a tree 80 feet high and 3 feet in diameter.



GUM ELASTIC (three-quarters natural size)

The branches are short, stout, and stiff, and often armed with straight or curved spines.

The **leaves** are oblong, more or less grouped near the ends of short branchlets, or spurs, rounded at the apex, narrowed at the base, thick, firm, dark green and shiny above, and partly covered below with soft brown to silvery hairs. They are from 1 to over 2 inches in length and up to 3/4 inch wide.

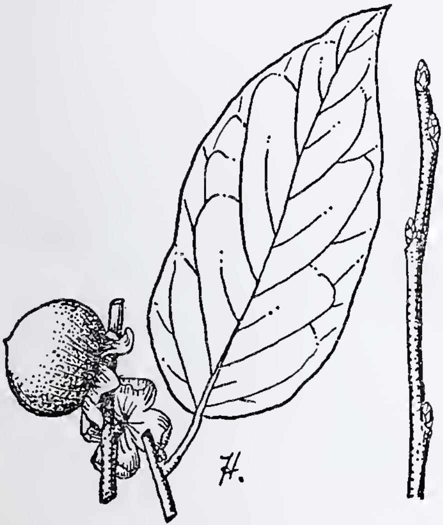
The **flowers** are very small and open in summer, each borne on a hairy flower-stem (pedicel) about 1/8 inch long. They are borne in clustered groups of 15 to 18, springing from near the axils of the new leaves or near the leaf-scars of old leaves. The petals are white and lobed. The **fruit** is fleshy, black, oblong, about ½ inch in length, borne singly or in a cluster of 2 or 3, and usually dry and firm on the outside. A single light-brown, firm rounded seed is borne in each, ripe when the fruit falls from the tree in autumn.

The **wood** is light-brown streaked with white and surrounded by a band of lighter colored sapwood. It is heavy, hard, and close-grained.

PERSIMMON

(*Diospyros virginiana* L.)

THE persimmon is well known throughout its range. It is a small tree, rarely exceeding 50 feet in height and 18 inches in diameter, occurring in the state as far west as the Colorado River. It seems to prefer dry, open situations, and is most abundant in old fields, though it occurs on rich bottom lands.



PERSIMMON
Leaf and Fruit, one-half natural size
Twig, three-quarters natural size

The **bark** of old trees is almost black and separated into thick nearly square blocks, much like the black gum.

The leaves are alternate, oval, entire, 4 to 6 inches long, dark green and shining above, paler beneath.

The small **flowers** which appear in May, are yellowish or cream-white, somewhat bell-shaped, the two kinds occurring on separte trees; the male in clusters of 2 or 3, the female solitary. They are visited by many insects.

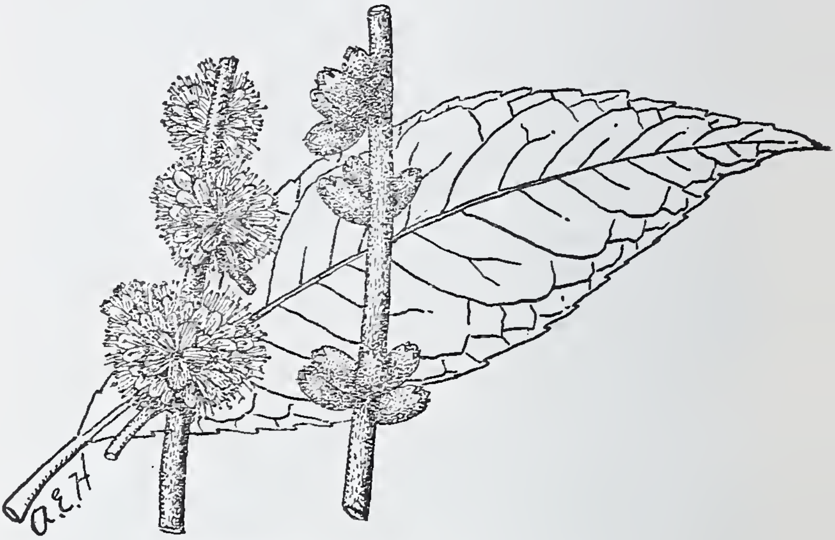
The **fruit** is a pulpy, round, orange-colored or brown berry, an inch or more in diameter and containing several flattened, hard, smooth seeds. It is strongly astringent while green, but often quite sweet and delicious when thoroughly ripe. It is much relished by children, and by dogs, 'possums and other animals.

The **wood** is hard, dense, strong, the heartwood brown or black, the wide sapwood white or yellowish. It is particularly valued for shuttles, golf-stick heads, and similar special uses, but is not of sufficient commercial use to warrant its general encouragement as a timber tree.

SWEETLEAF (Horse Sugar)

(*Symplocos tinctoria* (L.) L'Her.)

THE Sweetleaf is usually found along the borders of streams and swamps, chiefly in east Texas. It seldom grows to a height of more than 30 feet or a diameter of more than 8 inches. The slender upright branches, forming an open head, are bluish or grayish, and decidedly roughened by the elevated leaf-scars, or places of attachment of the last crop of leaves.



SWEETLEAF (Leaf, one-half natural size)

The thick, shiny, dark green **leaves,** arranged alternately along the stem, vary from 5 to 6 inches in length and 1 to 2 inches in width. They remain on the twigs until spring. They are sweet and eagerly sought for food by livestock.

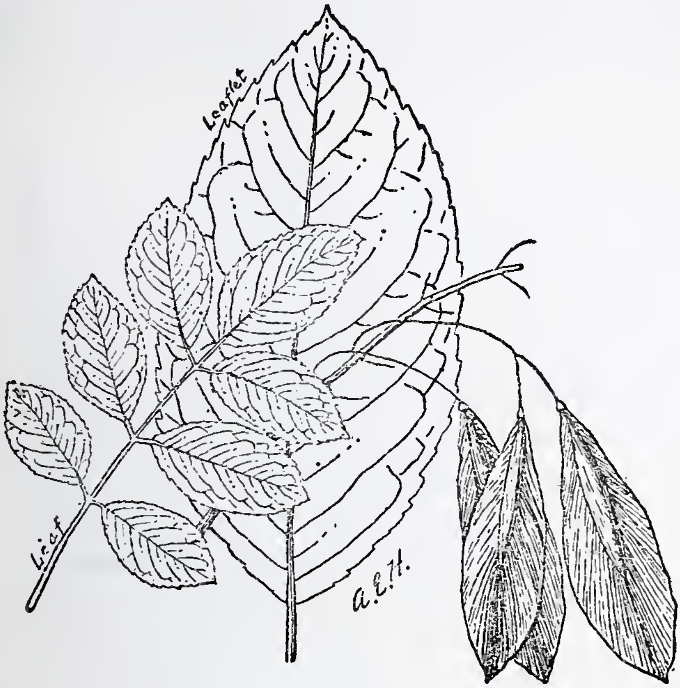
The tiny, pale yellow **flowers** are produced in close clusters at intervals along the branchlets. The small, one-seeded stone **fruit** has a thin dark orange or brown skin.

The **wood** is light, soft and pale red or brown. Both leaves and bark yield a yellow dye and the bitter aromatic roots have been used as a tonic.

WATER ASH (Swamp Ash.)

(*Fraxinus caroliniana* Mill.)

THE water ash, or swamp ash, is common in low shaded swamps as far west as the Neches river. It forms a tree, rarely more than 40 feet high, with a trunk sometimes 12 inches in diameter, and has small branches, making a narrow, often round-topped head.



WATER ASH
Leaflet and Fruit, three-quarters natural size
Leaf, one-quarter natural size

The **bark** is thin, light gray, marked by large irregularly-shaped round patches, which separate into small thin close scales.

The **leaves** are 7 to 12 inches long, opposite on the stem 5 to 7 leaflets each on a short stem, ovate to oblong, coarsely toothed, 3 to 6 inches long, 2 to 3 inches wide, dark green above, and paler smooth downy below.

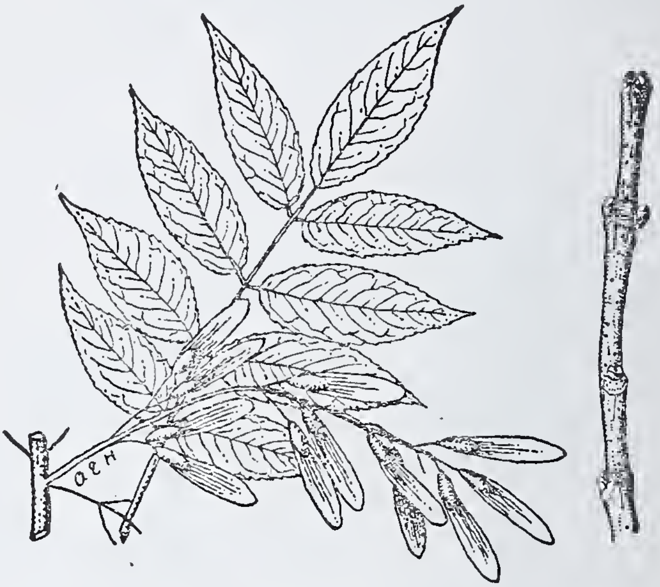
The **flowers** are small, the male and female occurring on different trees, and appearing in Februray or March. The **fruit** is elliptic to pear-shaped, frequently three-winged, 2 inches long, one-third to three-quarters inch wide. The wing extends below the seedbearing part and usually narrows into a stalk-like base.

The **wood** is light, soft, weak, close-grained, nearly white, sometimes tinged with yellow, with thick lighter-colored sapwood. It is used chiefly for fuel.

WHITE ASH

(*Fraxinus americana* L.)

THE white ash is found in the north eastern part of the state. It grows to best advantage in the rich moist soils of upper bottom land. The bark varies in color from light gray to a dark-brown. The rather narrow ridges are separated with marked regularity by deep, diamond-shaped fissures.



WHITE ASH

Twig, one-half natural size — Leaf, one-third natural size

The leaves are from 8 to 12 inches long and have from 5 to 9 plainly stalked, sharp-pointed leaflets, dark green and smooth above, pale green beneath. The **flowers** are of two kinds on different trees, the male in dense reddish purple clusters and the female in more open bunches. The **fruit** is winged, 1 to 1½ inches long, resembling the blade of a canoe paddle in outline, with the seed at the handle end, maturing in late summer and distributed effectively by the winds.

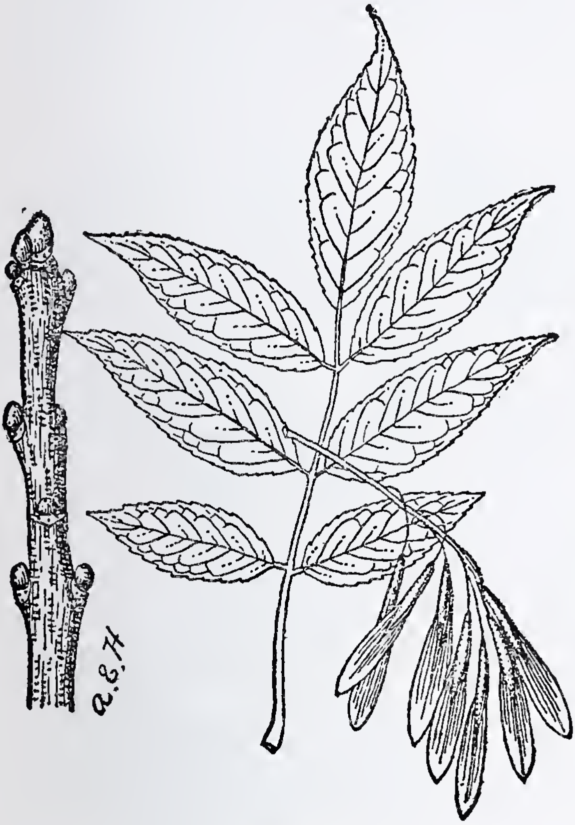
The wood of white ash is extremely valuable on account of its toughness and elasticity. It is preferred for small tool handles and athletic and agricultural implements. It is also used extensively for furniture and interior finish.

The ashes form the only group of trees in eastern America that have opposite, compound leaves with 5 or more leaflets. This fact provides a ready means of identifying the group.

GREEN ASH

(*Fraxinus pennsylvanica lanceolata* (Bork.) Sarg.)

THE green ash is a common tree, most abundant along streams. It is found widely over the state as far west as the Guadalupe river. It attains a height of 50 feet or more, has spreading branches and a trunk ranging up to 2 feet in diameter. The twigs are smooth, round, and ashy gray marked by pale lenticels and rusty bud-scales.



GREEN ASH
Fruit, two-thirds natural size
Leaf, one-third natural size
Twig, three-quarters natural size

The **bark** is a half inch thick or more, brown, tinged with red and slightly furrowed or ridged. The **leaves** are attached opposite on the stem, compound, 10 to 12 inches long, 7 to 9 stalked leaflets which are pointed and slightly toothed on the margin. They differ from those of white ash in being bright green or yellow-green on both sides.

The **flowers** are small, male and female flowers occurring on dfiferent trees.

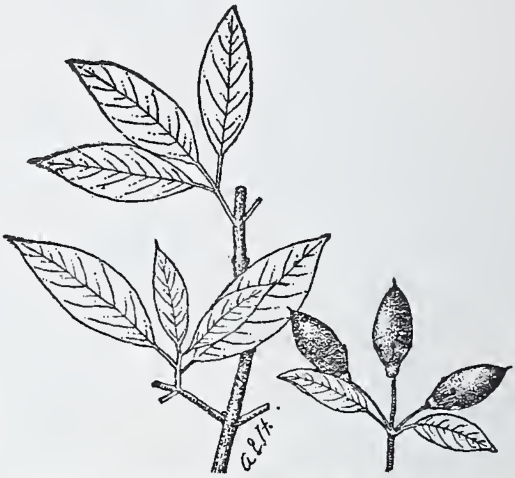
The **fruit** is flat, winged, 1 to 1½ inches long, one-quarter to one-third inch wide, the wing portion extending well down past the middle of the seed-bearing part, and with the wing sometimes square or slightly notched at the outer end.

The **wood** is heavy, hard, rather strong, brittle, coarse-grained, light brown, with a rather broad layer of lighter sapwood. It is used for the same purposes, but is not as desirable as white ash.

SWAMP PRIVET

(*Forestiera acuminata* (Michx.) Poiret)

SWAMP privet or forestiera is found along river banks, along lakes and standing water over east Texas to the Colorado river. It is usually a large shrub but often becomes a small tree, less than 30 feet high, with a short trunk usually less than 8 inches in diameter. Its youngest branches are slender, somewhat hairy, slightly angular, and varying in color from yellowish-green to brown. They become darker and more rounded the second season.



SWAMP PRIVET (two-thirds natural size)

The **bark** is thin, dark brown to brownish-gray, close, and slightly ridged.

The **leaves** are opposite, 2½ to 4 inches long, 1 to 1½ inches wide, petioled, and long pointed at both ends, yellowish-green on the upper surface, paler on the lower and slightly toothed above the middle.

The **flowers** appear in April before the leaves. They are of two kinds, borne separately on the same tree, rather small and in clusters.

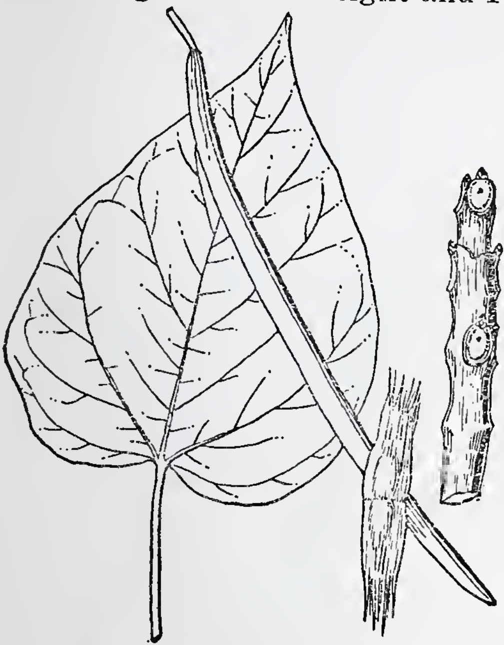
The **fruit** falls as soon as ripe in May or June. It is oblong in shape, covered with a tough dry pulp, slightly curved when young (about an inch long and one-quarter inch wide), and tipped with a point. It is deep purple and contains a one-seeded stone.

The **wood** is close-grained, yellowish brown, weak and rather soft. It has no economic use.

CATALPA (Hardy Catalpa)

(*Catalpa speciosa* Engelm.)

CATALPA, often miscalled "catawba," is native to the central Mississippi River basin, but is found naturalized in eastern Texas and occurs on various qualities of soil, most frequently on rich, moist bottoms. It is a medium-sized tree, rarely exceeding 50 feet in height and 15 inches in diameter. The trunk is usually short and the head broad with spreading branches.



CATALPA
Leaf, one-third natural size
Twig, two-thirds natural size

The **bark** varies from dark gray to brown, slightly rough, being divided into narrow shallow strips or flakes.

The **leaves** are simple, opposite, oval long-pointed, 6 to 10 inches long, and heart shaped at the base.

The **flowers** appear in clusters or panicles in May or June. They are white with purple and yellow markings, and this makes them decidedly showy and attractive.

The **fruit** consists of a bean-like pod, 8 to 16 inches long and from three-eighths to one-half inch in diameter. It hangs on the tree over winter and gradually splits into two parts, or valves. The seeds are about 1 inch long and terminate in wings that are rounded and short-fringed at the ends.

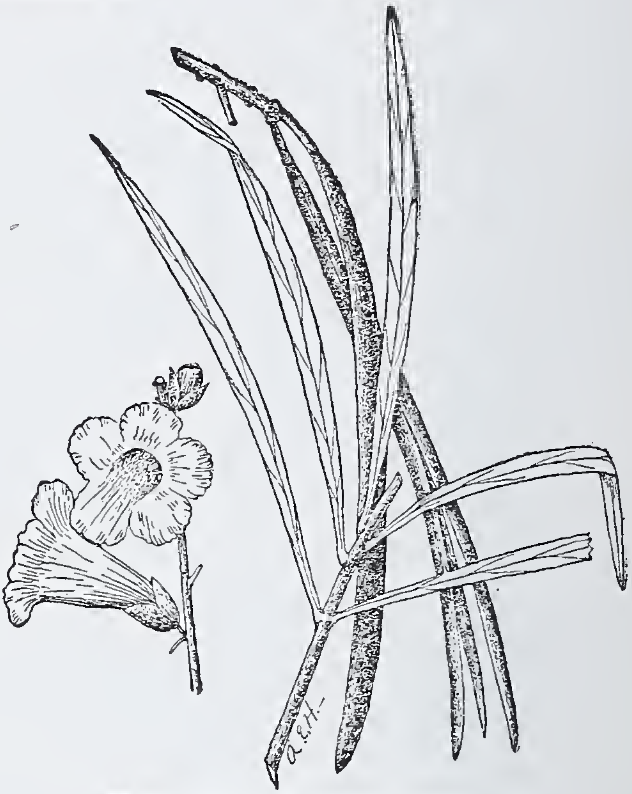
The **wood** is rather soft, light, coarse-grained, and durable in contact with the soil. It is used for fence posts, poles and fuel, and occasionally for railroad ties. It is a mistake to attempt to grow catalpa for fence-posts or other uses except on good agricultural soil.

DESERT WILLOW

(*Chilopsis linearis* D. C.)

THIS interesting tree is not a willow and it has flowers, pods and seeds somewhat like the catalpa, in fact it is closely related to the catalpa. Often reaching a height of 25 feet and a diameter of 10 to 12 inches, it is found usually in dry, gravelly, porous soils in the valley of the lower Rio Grande and through west Texas.

The leaves are less than one-half inch wide and from 6 to 12 inches long, light green, and pointed. Their arrangement on the twig is either opposite or alternate.



DESERT WILLOW (one-half natural size)

The white **flowers** shade into pale purple and are blotched in their "throats" with pale purple. They occur in an elongated cluster, or raceme, opening successively toward the end of the flower stalk.

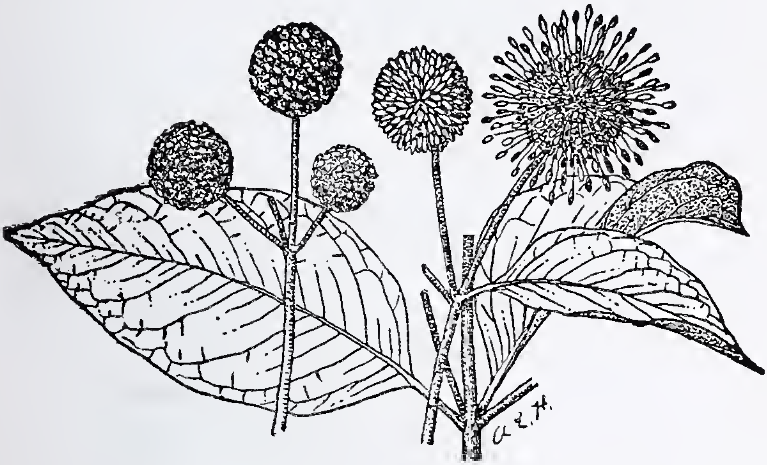
The **fruit** "pods" are really capsules 3 to 4 inches long, hard or woody, very slender, and contain numerous small seeds.

The soft, weak, close-grained **wood** is brown streaked with yellow. The sapwood turns to heartwood in 2 or 3 years.

BUTTON BUSH

(*Cephalanthus occidentalis* L.)

THE button bush is a small tree or large shrub, usually less than 50 feet high, with a straight tapering trunk up to a foot in diameter. The branches are generally upright and the branchlets spreading and pithy in the centers. They often occur in whorls of three from one place on the stem. The tree grows along the low wet borders of ponds and streams and in shallow swamps throughout east Texas to the lower Brazos river valley.



BUTTON BUSH

Leaf, one-third natural size — Fruit, two-thirds natural size

The **leaves** occur in pairs or in whorls of 3 (occasionally more), each oval or elliptical, pointed and rounded at the base, from 2 to 7 inches long by 1 to 3 inches wide. They are dark green on the upper side, thin, with a large central midrib, yellowish, and covered below with long white hairs. Some fall in the autumn, others remain on the branchlets over winter.

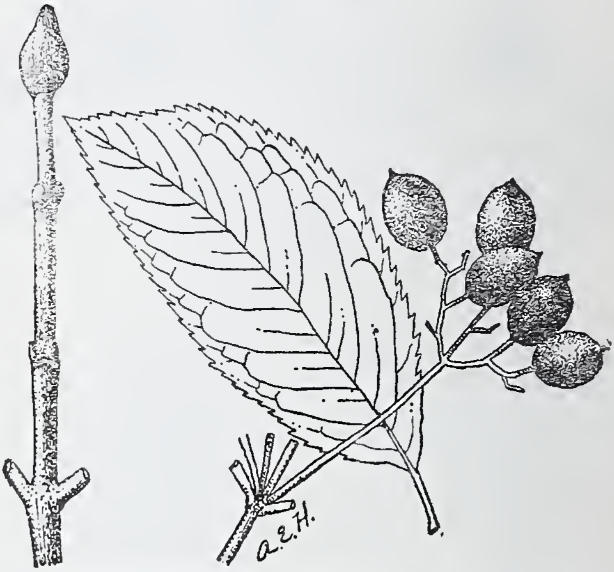
The **flowers** form a creamy white or yellow, round head about an inch in diameter, borne in clusters, or panicles. The heads are made of many very small flowers, each fragrant and nectar-bearing. The long thread-like projections (styles), very conspicuous over the flowering heads, are the outer portions of the seed-bearing or female portions of the flower. The **fruit** is a compound ball, or mass, ¾ inch across, dark brown when ripe and hard in texture, containing two elongated seeds from each separate flower. The **wood** is said to be heavy, hard and close-grained, of a yellow or yellowish-brown color.

RUSTY BLACK HAW (Viburnum)

(*Viburnum rufidulum* Raf.)

THE rusty black haw is found in woods and thickets over east Texas. It forms a tree sometimes 35 feet high with a trunk over a foot in diameter but is usually much smaller, often flowering as a shrub. The twigs are ashy-gray, becoming dark dull reddish brown after one to several years. The winter buds are densely covered with rusty brown hairs which persist for some weeks at the base of the leaf-stalks.

The **bark** is one-quarter to one-half inch thick becoming roughened into small platelike dark brown scales tinged with red.



RUSTY BLACKHAW (three-quarters natural size)

The **leaves** are attached opposite each other on the stem, elliptic to obovate or oval, pointed or blunt at the apex, wedge-shaped or rounded at the base, and with fine teeth on the margin. They are leathery in texture, very shining and dark green above, pale and dull below, about 3 inches long and 1 to 1½ inches wide.

The **flowers** are small and white, and each has five petals and five stamens, appearing in the spring, in dense clusters at the tips of branches.

The **fruit** ripens in the fall. It is a bright-blue oval drupe or berry, over one-half inch long, covered with a glaucous bloom, and containing a stony seed one-half inch long and one-third inch wide.

The bad smelling **wood** has no economic use.